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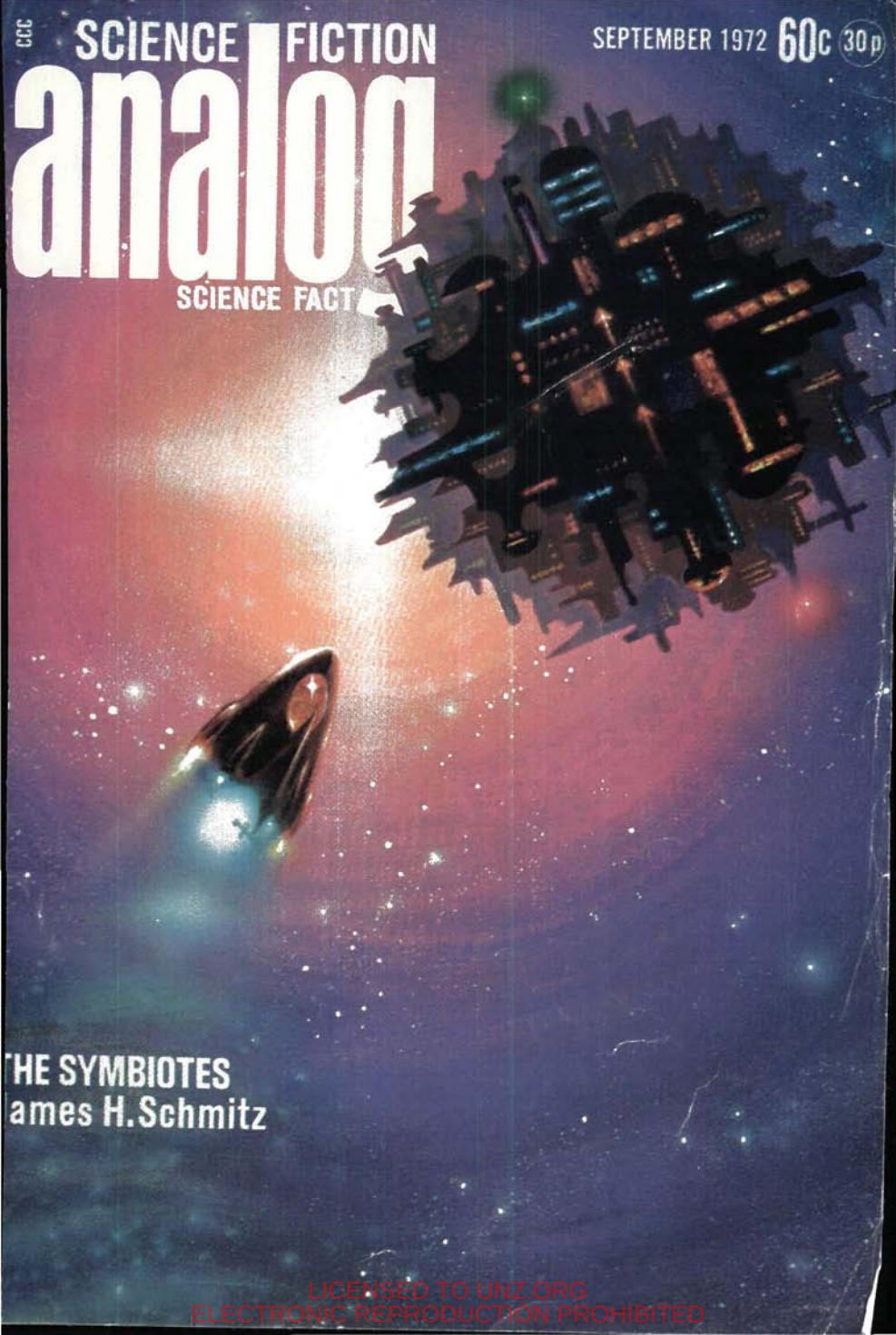

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BUCKMINSTER FULLER: THE SYNERGETIC MAN

by NORMAN SPINRAD

Editor's note: We start a new feature that will probe the work and ideas of some of the intriguing thinkers of our times. Since we don't want to cut down on the stories or fact articles, we have omitted this month's Editorial.

Science fiction stories have forecast not only new inventions and discoveries; they have also predicted the evolution of a new type of human being—the competent, intelligent, self-reliant man of the future. Turns out he's been right here among us, all along!

When the New York *Times* published a full-page "poem" by R. Buckminster Fuller, it identified the author simply as "an inventor, philosopher, and poet." As far as I know, this was the only "poem" Fuller had published, and was itself simply a compressed analysis of the situation of "Spaceship Earth" in the present locus in time and space. Since Fuller had written it in the form of a poem, the *Times* had added "poet" to his previous credits of mathematician, cartographer, inventor, teacher, historian, and yes indeed, philosopher.

Perhaps the missing credit is a rather archaic term that might encompass them all: savant. "A person famous for his knowledge and wisdom," according to my dictionary. Buckminster Fuller is certainly that: the inventor of the geodesic dome, a long-time environmentalist, a self-proclaimed "world man," a famous nonstop talker, a growing cult-object in the counterculture, called the "Marshall McLuhan of the Seventies" by the popular press, and "the Leonardo da Vinci of our time" by McLuhan himself.

Therefore, I eagerly accepted the offer to interview Fuller at the Pacific Palisades home of his son-in-law, film maker Robert Snyder. In preparation for the interview, I read carefully through "Operating Manual for Spaceship Earth," a 120-page trea-

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tise which is to Buckminster Fuller as the far larger "Understanding Media" is to Marshall McLuhan. The scope of this little book is staggering.

It begins with a discussion of the growth of scientific specialization as the outcome of the rise of the nation-state, which Fuller in turn sees as a front behind which the "Great Pirates" (successful sea rovers who evolved into the world's economic overlords) ran the world, until the two World Wars gave rise to a level of technology beyond their comprehension and therefore beyond their control, rendering them extinct and leaving the world political-economic structure without a functioning command center. From there to a discussion of the Earth-Sun complex as a self-regenerating energy system, a nice introduction to topology and general systems theory, an elaborately justified definition of "wealth" as the sum of energy and knowledge, computer theory, and on to a series of proposals for putting the entire Earth on a self-sustaining ecological basis by switching on the "main engines" of our planetary spaceship. All illustrated with well-chosen extended metaphor, but alas, in a prose style which all too often lapses into sentences like: "We find no record as yet of man having successfully defined the universe—scientifically and comprehensively—to include the nonsimultaneous and only partially overlapping, micro-macro, always and everywhere transforming, physical and metaphysical, omni-complementary but nonidentical events."

This little book was crammed with insights and profundities, but there also seemed to be a certain cranky tone to parts of it, and many cosmic enormities seemed to hide in tangled thickets of impenetrable verbiage. It was often impossible to tell whether these hidden enormities were actually there, or were no more than illusions generated by the transcendental turgidities of the prose. Only an encounter with the man himself could really reveal whether Fuller was a brilliant universal intellect handicapped by a difficult and turgid prose style, or a cranky inventor blowing up his areas of competence to universal proportions by a smoke screen of pseudo-metaphysical jargon.

Arriving early for the interview, I noticed a rather strange map hanging on one of the walls of the Snyder living room. The world had been cut up into a strange jagged shape that at first glance seemed incomprehensible. On closer inspection, the elegance of the projection became apparent. The map had been made by picturing the globe as a set of interpenetrating tetrahedrons the faceted surface of which approximated a sphere in exactly the same manner as the faceted surface of a Fuller dome approximates a hemisphere. By cutting along the edges of facets chosen so that all of them passed entirely through water areas, and spreading

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the resultant single irregular piece flat, one produced a map in which there were no distortions in the relative sizes of the continents. The north pole was at the center of the map, and the continents spread along a north-south axis on either side of it, the Americas and Antarctica to the right, Eurasia and Africa to the left, a vision of the Earth's land area as one more or less continuous world-island. A legend identified this map as Fuller's cartographic invention, the first new system of cartographic projection in two hundred years. It was also an eye-opening example of how Fuller had elaborated the same mathematical principle (that a system of interpenetrating tetrahedrons generates a surface of planar facets that approximates a nonplanar sphere) in two entirely different practical directions, producing a new cartographic system and the geodesic dome.

Fuller himself proved to be a short elderly man in quite sturdy and trim shape for his seventy-five years, and nattily dressed in a black vested suit. He wore glasses, and a hearing aid in his left ear. He introduced himself as "Bucky Fuller" with polite informality, having no doubt been subject to more interviews in his three-quarters of a century than he might care to contemplate. Although he had just stepped off a plane from St. Louis, two time zones away, he showed no signs whatever of time-zone cafard. Fuller wears three watches: one set for the time at his Carbondale, Illinois headquarters, one for his last point of departure, one for his next point of arrival. He seems to have utterly defied current theories of an inborn "biological clock" fouling up the human metabolism when people move too rapidly across time zones by having actually adapted physiologically to his assumed role of "world man" to whom the Earth is one big spaceship keeping celestial time.

Fuller and I sat down opposite each other on a couch. While I fiddled with my tape recorder, he changed the battery in his hearing aid, observing: "I keep thinking my hearing's getting worse, and every time it turns out to be the battery." For a moment, it seemed as if we were two cyborgs adjusting our respective extended electronic memory and sensory systems; that sort of thought comes to you around Buckminster Fuller.

I opened by asking him whether "Operations Manual for Spaceship Earth" represented a basic statement of what he was about, and Bucky Fuller was off to the verbal races.

"It's basic, but not comprehensive of everything I'm thinking. I'm trying to organize a strategy for getting all of our universal energies understood. Unquestionably, if humanity is going to survive, it's going to survive because all humanity knows what it's all about, rather than having a single leader or any kind of '-ocracy.'"

Did that mean that his goal was

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nothing less than to make every man a comprehensivist like himself? To create, in effect, a race of Renaissance men, in which the ordinary man would be a wide-ranging generalist, and there would be no specialists?

"Yes, there would be no specialists. If you're a comprehensivist, you can spend a week in some direction, you can plunge in various directions and be very effective. I've spent some time in depth on a bathroom, another time I would go in depth and develop a vehicle, and another time some kind of building. I've found that within two or three days I can be talking with any scientist regarding his subject to his satisfaction. It takes me a little time to break through the ethnic languages, the industry language, a sort of special laboratory language, a department of education language, but once you break through those languages and discuss generalized principles, you're suddenly at home."

Fuller went on to elaborate on the evils of today's specialization. According to him, intellectual and scientific specialization arose in large part as the result of "divide and conquer" policies of political strongmen, who had a natural and obvious self-interest in keeping their intellectual superiors from comprehending the universe as a whole. In return for political patronage and keeping their heads, scientists, technologists and intellectuals "minded their own business," stuck to their narrow specialties. Also, the range of data any one man could understand was limited by the data-handling and retrieval capacity of the individual human brain.

But now we have the computer, "an extension and enlargement of the brain," which gives human beings the data-handling and retrieval capabilities to free them from the need to confine their personal intellectual territory to that area whose relative data they can encompass with the naked mind. Computers will assume the function of the specialists, leaving the new "comprehensivist man" free to exercise that intuitional generalizing capacity which is the highest function of the human mind, making each of us a Renaissance man, a potential Leonardo.

Needless to say, as a science fiction writer and therefore a comprehensivist and a generalist at heart, I found this notion highly seductive, even a little flattering. It also helped explain why Buckminster Fuller was becoming something of a cult-figure in the counterculture (and *en passant*, why science fiction has become the favored literature of the young). He certainly put the narrow specialists and would-be authority figures running the political, scientific, and economic establishments in their intellectual places! His congenial picture of the coming open, universal, synergetic man, the full flowering of

continued on page 169

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THE SYMBIOTES

A symbiotic relationship is fine—
for the symbiotes.
But when they become parasites. . . !

JAMES H. SCHMITZ

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KELLY FREAS

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I

Trigger had been shopping at Wehall's that morning, winding up with lunch on one of the store's terrace restaurants. She had finished, lit a Twirpy, and was smoking it contemplatively when a tiny agitated-sounding voice spoke to her.

"Good lady," it said, "you have a kind face! I'm a helpless fugitive and an enemy is looking for me. Would you let me hide in your handbag until he goes away?"

The words seemed to have come from the surface of the table. Someone's idea of a joke . . . Trigger let the Twirpy drop from her fingers to the disposal disk and looked casually around, expecting to discover an acquaintance. People sat at tables here and there about the terrace, but no one was at all near her. And she saw no one she knew.

"Good lady, please! There isn't much time!"

She shrugged. Why not go along with the humorist?

"Where are you?" she asked, in a conspiratorially low tone. "I don't see you."

"Between the large blue utensil and the smaller white one. I don't dare show myself. The abominable Blethro wasn't far behind me!"

Trigger glanced at the blue pitcher on the table, moved it a few inches back from a square white sandwich warmer. Her eyes widened briefly. Then she laughed.

One of Wehall's advertising stunts! A manikin, a miniature male figure, crouched beside the pitcher. Straightened up, it might have reached a height of eight inches. The features were exquisitely mobile and lifelike. Blue eyes looked imploringly at her. It wore a velvety purple costume—the finery of an earlier century.

"You really are cute, little man!" she told it. "A work of art. And just what kind of work of art are you, eh? Protohom? Robot? Telecontrolled? Do you know?"

The doll was shaking its head violently. "No, no!" it said. "Please! I'm as human as you are. Help me hide before Blethro finds me, and I'll explain everything."

Her reactions were being recorded, of course. Well, she wouldn't mind playing their game for a minute or two.

"A joke's a joke, midget," she remarked, drawing up her eyebrows. "But slipping you into my bag just might be construed as shoplifting. Do you realize you probably cost a good deal more than I make in a year?"

"They said no one would believe me," the doll told her. Tears in the tiny eyes? She felt startled. "I'm from a world you've never heard about. Our size was reduced genetically. Blethro had three of us in a box in his aircar. We agreed to attempt to escape the next time he opened the car door . . ."

Trigger glanced about. Halfway across the terrace, a man stood star-

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ing in her direction. She shifted the blue pitcher slightly to give the doll better cover. "Where are the other two?" she asked.

"Blethro seized them before they could get out of the car. If I'm to find help for them, I must get away first. But you believe I'm a toy! So I—"

And now the man was coming purposefully along the aisles toward Trigger's table. She cupped a light hand over the doll as it began to straighten up. "Wait a moment!" she muttered. "Does your abominable Blethro sport a great yellow moustache?"

"Yes! Is—"

Trigger swung her handbag around behind the pitcher, snapped it open, blocking the man's line of view. "Blethro seems to have spotted you," she whispered. "Keep down and pop inside the bag! We're leaving."

Bag slung from her shoulder, she set off quickly toward the nearest door leading from the terrace. Glancing back, she saw the man with the jutting yellow moustache lengthen his stride. But he checked at the table where she'd been sitting, hastily moved a few articles about and lifted the top off the sandwich warmer. Trigger hurried on, not quite running now.

A small sign on the door read *Wehall Employees Only.* She looked back. Blethro was hurrying, too, not far behind her. She pushed through the door, sprinted along the empty white hallway beyond it. After some seconds, she heard a yell and his footsteps pounding in hot pursuit.

The hall ended where another one crossed it. Blank walls, and nobody in sight. Left or right? Trigger ran up the branch on the right, turned another corner—there at last was a door!

A locked door, she discovered instants later. Blind alley! Blethro came rushing around the corner, slowed as he saw her. He smiled then, walked unhurriedly toward her.

"End of the line, eh?" he said, breathing heavily. "Now let's see what you have in that bag!"

"Why?" Trigger asked, slipping the bag from her shoulder.

Blethro grinned. "Why? Why were you running?"

"That's my business," Trigger told him. "Perhaps I felt I needed the exercise. Unless you're something like a police officer—and can prove it—you'd be well advised to leave me alone! I can make very serious trouble for you."

The threat didn't seem to alarm Blethro, who was large and muscular. He continued to grin through his moustache as he came up. "Well, perhaps I'm a Wehall detective."

"Prove that!"

"I don't think I'll bother." He held his hand out, the grin fading. "The bag! Fast!"

Trigger swung away from him. He made a quick grab for her. She let the bag slide to the floor, caught the

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grabbing arm with both hands, moving solidly back into Blethro, bent and hauled forward. He flew over her head, smacked against the locked door with satisfying force, landed on the floor more or less on his shoulders, made an unpleasant comment and rolled back up on his feet, face very red and angry.

Then he saw the handbag standing open on the floor beside Trigger and a gun pointed at him. It wasn't a large gun, but its appearance was sleek and deadly; and it was held by a very steady hand.

Blethro scowled uncertainly. "Here—wait a minute!"

"I hate arguments," Trigger told him. "And I did warn you. So just go to sleep like a good boy now!"

She fired and Blethro slumped to the floor. Trigger glanced down. The doll figure was clinging to the rim of the handbag, peering at her with wide eyes. "Did Blethro have friends with him?" she asked.

"No. He came alone in the car. But he'd indicated he was to meet someone here."

Trigger considered, nodded. "We'll put this away again." She slipped the gun into a cosmetics purse she'd been holding in her left hand, closed the purse and placed it in the bag. Then she knelt beside Blethro, began going quickly through his pockets.

"Is he dead?" the small voice inquired from behind her.

"Not dead, midget! Nor injured. But it'll be an hour or two before he wakes up. Good thing I nailed him first—he carries a gun. What's your name, by the way? Mine's Trigger."

"My name's Salgol. What are you doing?"

"Something slightly illegal, I'm afraid. Borrowing Blethro's car keys—and here they are!" Trigger straightened up. "Now let's arrange this a little differently." She picked up Salgol, eased him into her blazer pocket. "You stay down in there when there's anyone around. Blethro left his car and the box with your friends in it on a lot next to the restaurant terrace?"

"Yes."

"Fine," Trigger said. "You point the car out to me when we get there. Then we'll all go somewhere safe, and you'll tell me what this is about so we can figure out what to do."

"Thank you, Trigger!" Salgol piped from her pocket. "I did well to trust you. I didn't have much hope for Smee and Runderin, or even for myself."

"Well, we may not be out of trouble yet! We'll see." Trigger snapped the bag shut, slung it from her shoulder. "Let's go before someone happens by here! Ready?"

"Ready." Salgol dipped down out of sight.

A few people glanced curiously at Trigger as she came back out on the restaurant terrace. Apparently they'd realized something was going on between her and Blethro, and were wondering what it had been about. She thought it shouldn't matter. Ev-

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eryone having lunch here would have finished and left before Blethro regained his senses. She sauntered across the terrace, went along a passage to the parking lot, stopped at the entrance. There was no attendant in sight at the moment. She waited until a couple who'd just got out of their car went past her. All clear now . . .

"Salgol?"

She could barely hear his muffled reply from the pocket.

"Take a look around!" she told him quietly. "We're there."

Salgol stuck his head out and identified Blethro's aircar as one of those standing against the parapet on the street side of the parking lot—the seventh from the left. Then he disappeared again until Trigger had unlocked the car door, stepped inside and locked the door behind her.

The car was of a fixed-canopy, one-way-view type. Trigger didn't take off immediately. The box in which Salgol's companions were confined stood on a back seat, and she wanted to make sure they were in there. She worked the latches off it and opened the top.

They were there—two tiny, charming females in costume dresses which matched Salgol's outfit. They stared apprehensively up at her. She lifted Salgol into the box and he spoke a few unintelligible lilting sentences to them. Then they were beaming at Trigger, though they said nothing. Apparently they didn't know Translinque. She smiled back, left the box open, sat down at the controls and took the car up into the air.

II

The hotel room ComWeb chimed, and Trigger switched it on. Telzey's image appeared on the screen.

"I came home just now and got your message," Telzey said. "I'm sorry there was a delay." Her gaze shifted around the room. "Where are you?"

"Hotel room."

"Why?"

"Seems better to keep away from the apartment just now."

Telzey's eyebrows lifted. "Trouble?"

"Not yet. But there's more than likely to be! I ran into something unusual, and it's a ticklish matter. Can you come over?"

"As soon as you tell me where you are."

Trigger told her, and Telzey switched off, saying she was on her way.

There was a world called Marell . . .

Trigger said, "The Old Territory people who set up the genetic miniaturization project did it because they thought it had been proved there'd be a permanent shortage of habitable planets around. So that sets it back about eleven hundred years, when they'd begun to get range but didn't yet know where and how to look."

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They'd discovered Marell, which seemed eminently habitable, and decided to populate it with a human strain reduced in size to the point where a vast number could be supported by the planet without crowding it. A staff of scientists and technicians of normal size accompanied the miniature colony to see it safely through any early problems.

On Marell, a plague put an abrupt end to the project before it could get under way. It wiped out the supervisory staff and more than half of the small people; and no Old Territory ship touched on the planet again. The survivors were left to their own resources, which were slender enough. They came close to extermination but recovered, began to develop a technology, and in the course of the following centuries spread out until they'd made a sizable part of Marell their own.

"Steam and electricity," said Trigger. "They'd got up to that, but not beyond it. One group knew what actually had happened on Marell, but they kept their records a secret. Some others had legends that they were descendants of Giants who flew through space and that kind of thing. Not many believed the legends. Then the Hub ship came."

It had been a surveyor ship. It moved about in Marell's skies for weeks before coming down to take samples of the surface. It also took a section of a Marell town on board, along with about a hundred of its inhabitants. Then it left.

"When was that?" Telzey asked.

"Salgol was one of the first group they picked up, and he was the equivalent of eleven standard years old at the time," said Trigger. "That makes it fifteen standard years ago."

"Most of the people they took with them then died," Salgol told Telzey. "They didn't treat us badly but they gave us bad diseases. They found out what to do about the diseases, and taught Translingue to those of us who were left, and some of the Giants learned one of our main languages."

Telzey nodded. "And then?"

"We went back to Marell. They knew we had an electrical communication system. They used it."

The Hub ship issued orders. Geologically, Marell was a rich world, and the Hub men wanted the choicest of its treasures. They were taking what was immediately on hand, and thereafter the Marells would work to provide them with more. Quotas were set. The ship would return each year to gather up what had been collected.

"How many Marells were there now?" Telzey asked.

Salgol shook his head. "That isn't definitely known. But when I was there last, I was told there might be sixty million of the people."

"So, even with limited equipment, it adds up to a very large annual haul of precious stones and metals."

"Yes, lady, it has," said Salgol.

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"And you don't have weapons against space armor."

"No. The people do have weapons, of course, and good ones. There are huge animals there—huge as we see them—and some are still very dangerous. And the nations have fought among themselves, though not since the ship came. But they aren't like your weapons. One town turned its cannon on the Giants when they came to collect. The Giants weren't hurt, but they burned the town with everyone in it."

Trigger said, "Besides, there were threats. The Marells were told they'd better be thankful for the current arrangement and do what they could to keep it going. If the Hub government ever learned about them, the whole planet would be occupied, and any surviving Marells would be slaves forever."

"Did you believe that?" Telzey asked Salgol.

"I wasn't sure, lady. The Hub people I've met before today might do it, if they saw enough advantage in it. Perhaps you had a very bad government."

"Then why did you run away from Blethro? Wasn't that endangering your world, as far as you knew?"

Salgol glanced at his companions. "There's a worse thing beginning now," he said. "Those they took away before were to become interpreters like myself, or to provide some special information. But now they plan to collect the most physically perfect among our young people and sell them in the Hub like animal pets. I felt I had to take the chance to find out whether there weren't some of you who would try to prevent it. I thought there must be, since you don't seem really different from us except for your size."

Telzey said after a moment, "They'd risk spoiling the present setup with something like that?"

"It wouldn't spoil it, Telzey," Trigger said. "Blethro was acting as middleman. He was to make a contact today to sell the idea, with Runderin and Smee as samples and Salgol filling in as their male counterpart. If the deal went over, the merchandise would get amnesia treatment and be taught Translingue before delivery to the distributor. They'd be sold undercover as a protohom android speciality. *They'd* think it's what they were, and I doubt it would be possible to disprove it biologically. They'd be dead in ten years, before they could begin to show significant signs of aging. They were to be treated for that, too."

Telzey remarked, "Developing self-aware intelligence in protohom products is illegal, of course."

"Of course. But if the results could be made to look like those two, somebody would find it profitable."

Telzey regarded the tiny ladies with their beautiful faces, elaborate coiffures and costumes. They gave her anxious smiles. Replaceable erotic toys. Yes, the exploiters of Marell might have hit on a quite profitable sideline.

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She said to Salgol, "Could you tell someone how to get to Marell?"

He shook his head. "Lady, no. I've tried to find out. But the Hub men were careful not to let me have such information, and the people's astronomy isn't advanced enough to establish a galactic reference. All I can say is that it took the ships on which I've been three months to make the trip in either direction."

Trigger closed the door to the suite's bedroom, where the Marells had returned to their box. "Well?" she said. "How does it check out telepathically?"

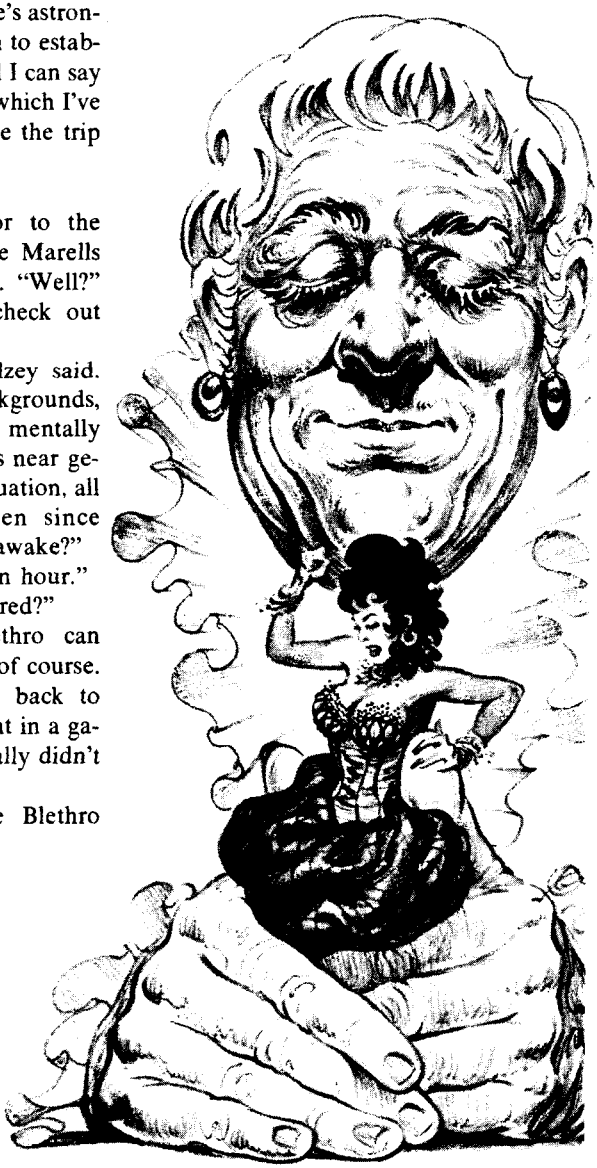
"They are human," Telzey said. "Allowing for their backgrounds, they can't be distinguished mentally from Hub humans. Salgol's near genius grade. It's a ticklish situation, all right. How long's it been since Blethro might have come awake?"

"Not much more than an hour."

"How well are you covered?"

Trigger shrugged. "Blethro can give them my description, of course. I dumped his car, taxied back to where I'd left mine, left that in a garage, and taxied here. I really didn't leave much of a trail."

"No. But we'll assume Blethro



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contacted his principals at once. That's obviously a big outfit with plenty of money. And the matter's important to them. You could upset their entire Marell operation and land them in serious trouble. They're probably looking hard for you."

Trigger nodded. "They'd try for a quick pick-up first. I figured our best chance to get a line on them would be while they're still looking for me. In fact, it might be the only real chance for a century to find out where Marell is. If they can't locate me and those three, they could dissolve the project and wipe out the evidence, and they probably will."

"Where do you want to take this?" Telzey said.

"Psychology Service, top level."

"That seems the best move. Why didn't you go directly to their city center?"

"Because I didn't want to have it fumbled by some underling," Trigger said. "I don't know the local Service group. You do."

"All right." Telzey looked at the room ComWeb. "Better not use that. I'll call the center from a public booth. They should have an escort here for you and the Marells in minutes."

She left. Trigger returned to the bedroom, told Salgol what they intended. He was explaining the situation to the other two while she closed and latched the box. She put on her blazer, glanced at her watch, sat down to wait.

Some three minutes later, she heard the faintest of clicks. It might have come from the other room. Trigger picked up the gun she'd left lying on the table beside her, stood up quietly, and listened. There were no further sounds. She started moving cautiously toward the door.

The air about her seemed to sway up and down, like great silent waves lifting and falling. Trigger stumbled forward into the waves, felt herself sink far down in them and drown.

III

"How do you feel?" a voice was saying; and Trigger realized her eyes were open. She looked at the speaker, and glanced around.

She was sitting in a cushiony deep chair; there was a belt around her waist, and her hands were fastened to the belt on either side. There was a tick in her right eyelid. Other nerves jerked noticeably here and

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there. The man who'd addressed her stood a few feet away. Another man, who wore a gold-trimmed blue uniform, sat at an instrument console farther up in the compartment. He'd swung around in his chair to look at her. This was a spaceyacht; and that splendid globe of magenta fire in the screen might be a sun she'd seen before.

"Nerves jumping," she said in reply to the question. She ran the tip of her tongue over her lips. "And thirsty. This is the Rasolmen System?"

The uniformed man laughed and turned back to the console. The other one smiled. "Good guess, Miss Argee! You're obviously awake at last. You had me worried for a while!"

"I did?" Trigger said. He'd shoved back the flap of his jacket as he spoke, and she had a glimpse of a gun fastened to his belt.

"It was that knockout method we used on you," he explained. "It's one of the safest known, but in about one out of every three hundred cases, you can run into side effects. You happen to be that kind of case. Frankly, there were a couple of times I wasn't too sure you mightn't be going into fatal convulsions! But you should be all right now." He added, "My name is Wrann. Detective by profession. I'm the man responsible for picking you up—also for delivering you in good condition to my employer. You'll understand my concern."

"Yes, I do," Trigger said. "How did you find me so quickly?"

He smiled. "Good organization—and exceptionally good luck! We had your description; and you'd been lunching at Wehall's. There was a chance you were among the store's listed customers. We ran your description against the list in the Wehall computer and had a definite identification in no time at all."

"I thought that list was highly confidential," said Trigger.

Wrann looked somewhat smug. "Few things remain confidential when you come up with enough money. You were expensive, but I'd been told to find you and a certain box, and find both fast, and ignore the cost. We'd thrown in a small army of professionals; but, as it turned out, you'd selected one of the first hotels we hit with your pictures and name. The name was no help. The pictures were. That identification came high, and the suite keys higher, but we got both. We were taking you out of there minutes later."

"What was hotel security doing all that time?"

Wrann grinned. "Looking the other way. Amazing, isn't it, in a fine establishment like that? Enough money usually does it. You *were* very expensive, Miss Argee. But my employer hasn't complained. And now we've almost reached our destination. Feel able to walk?"

Trigger moved her elbows. "If you'll take this thing off me."

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"In a moment." The detective helped her stand up, nodded at a passage behind them. "We had a comfortable little cell ready for you, but I was keeping you up front as long as you were in trouble and conceivably could need emergency treatment to pull you through. You'll find drinking water in the cell. If you'll do me the favor, you might straighten yourself out a bit then, before I hand you over at the satellite. You look rather rumpled."

She nodded. "All right. Did you bring along my makeup kit?"

"I brought along whatever you had at the hotel," Wrann said. "But I was told to keep your property together. You'll find a kit in the cell."

There were two barred cells then, facing each other at the end of the passage. Trigger stopped short when she saw who was in one of them. Wrann chuckled.

"Surprise, eh?" he said. "My employer also wants to see Mr. Blethro. Mr. Blethro was reluctant to make the trip. But here he is."

He unlocked the door to the other cell and slid it back, while Blethro stared coldly at Trigger. Wrann motioned her in, shut the door and locked it. "Now, if you'll back up to the bars—"

Trigger moved up to the door, and Wrann reached through the bars, unfastened the belt from around her waist and freed her wrists. "If you need anything, call out," he said. "Otherwise I'll be back after we've docked." He went off down the passage to the front of the yacht.

Trigger drank a cup of water thoughtfully, returned to the cell door. Blethro sat on a chair, moody regard fixed on the floor. The yellow moustache drooped. She heard Wrann say something to the pilot in the forward compartment. The pilot laughed.

"Blethro!" Trigger said softly.

Blethro gave her a brief, unpleasant glance, resumed his study of the floor.

Trigger said, "Are you in trouble with whoever it is we're being taken to see?"

Blethro growled something impolite.

"It is my business," Trigger said. "I know how we can get out of this. Both of us."

He lifted his head, moustache twitching with sudden interest. "How?"

"You heard what Wrann said about that knockout stuff they used on me?"

"Some of it," Blethro acknowledged. "I heard *you* earlier."

"Oh? What were the sound effects?"

Blethro considered, watching her. "Someone choking to death. Gasps—hoarse! Groaning, too."

"Fine!" said Trigger. "And I'll now have some dandy convulsions right here in this cell. As soon as I start, yell for Wrann. If I can get his gun and keys, we'll go after the pilot next."

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Blethro stared at her a moment longer, grinned abruptly.

"Why not?" he said. "I've become inconvenient to them—I've got nothing to lose." He stood up, came over to the bars of his cell. "You might even do it! But you'd better be quick. Wrann's a tough boy—tougher than he looks."

Trigger raked fingernails down the side of her face and dropped to the floor. Blethro bellowed, "Wrann! Better have a look at that girl! She's throwing a fit or something!"

Footsteps pounded along the passage before he finished. Trigger, contorting, eyes drawn wide, clutching her throat, breath rasping, heard Wrann's shocked curse. Then the bars rattled as the cell door slid open. Wrann came down on his knees beside her, reaching for an inner coat pocket.

Trigger's right hand speared stiffly into his throat. Wrann's head jerked back. She turned up on her left elbow, slashed her hand edge across the bridge of his nose, saw his eyes glaze, gripped his head in both hands, hauled him down across her and rammed his skull against the floor. Wrann made a gurgling sound.

Stunned but not out. His gun first—and she had it, hearing the pilot call, "Need some help back there, Wrann?" and Blethro's, "Naw—he's handling her all right!" as she squirmed out from under Wrann's weight and got to her knees. Wrann clamped a hand around her ankle then, pushing himself up from the floor; and she twisted around and laid the gun barrel along the side of his head. That was enough for Wrann. He dropped back, face down; and Trigger came to her feet.

She went quickly over to the cell door, Blethro watching in silence. Wrann's key was in the lock. Trigger took it out, glanced along the passage. She couldn't see the pilot from the door; but he could see the passage and anyone in it if he was at the console and happened to look around. She whispered, "Catch!" and Blethro nodded quickly and comprehendingly and put a big cupped hand out between the bars. She tossed the key over to him. He caught it. A moment later, he had his cell door unlocked and drew it cautiously open far enough to let him through.

They slipped out into the passage together. The pilot sat at his console, back turned toward them. Blethro muttered, "Better let me take the gun!"

"I can handle it." Trigger eased off the gun's safety, indicated Wrann. "Lock him in if you can do it quietly. But wait till I'm in the control section!"

She started off down the passage without waiting for his reply. She wasn't exactly trusting Blethro. Her own gun would have been preferable, but if her luck held, shooting wouldn't be necessary anyway. The magenta sun was sliding upward out of the yacht's screen; the pilot was

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using his instruments. She came up steadily behind him.

He reached out, pulled over a lever, then leaned back in his chair and stretched. "Wrann?" he called lazily. He turned, beginning to get out of the chair, saw Trigger ten feet away, gun pointed. He stared.

"Get up slowly!" she told him. "That's right. Now keep your hands up and go over to the wall."

She knew Blethro had entered the compartment; now he came into view on her right. He grinned. "I'll check him."

The pilot shook his head, began to laugh. "Damndest thing I've seen in a while! Awake five minutes, and you almost had the ship!"

"Almost?" said Trigger.

"Look at the screen."

She looked. The screen was blank. "Ship power went off just now," the pilot explained. "We're riding a beam."

Trigger said, "Check him out, Blethro!" Then, some moments later: "Where's your gun? You're bound to have one."

The pilot shrugged. "You're welcome to it! That drawer over there."

Blethro jerked open the drawer, took out the gun. "Now," Trigger said, "we have two guns on you, and we're in a bad jam. Don't be foolish! Sit down at the console, switch ship power back on and break us out of that beam. And don't tell me you can't do it!"

"I *am* telling you that." The pilot settled himself in the control chair. "I'll go through any motions you like. Nothing will happen. You can check for yourself. The people here don't want anyone barging in on them under power, so the satellite's overriding my console now, and we'll stay on their beam till it docks us. Sorry, but this simply hasn't done you any good!"

After a minute or two, it became evident that he'd told the truth. Blethro had begun to sweat. Trigger said, "How long before we dock?"

The pilot looked at a chronometer. "Should be another six minutes."

"Wrann brought a handbag of mine on board along with a box. Where did he put the bag?"

"There's a bulkhead cabinet beside the passage entry," the pilot told her. "It's not locked. The bag's in there."

"All right," Trigger said. "Get out of the chair. Blethro, put on his uniform. Hurry! If he's got a cap, put that on, too. I'll get my gun."

The pilot climbed out of the chair. Blethro frowned. "What'll that do for us?"

"We dock," Trigger said. "We come out. For a moment anyway, they may think you're the pilot. I'm a prisoner. We'll have three guns. We may be able to knock out the override controls and take off again."

The pilot shook his head. "That won't do you any good either."

Blethro grimaced, baring his teeth. "It can't hurt! They're dumping me, friend!" He jerked his gun. "The uniform off! Fast!"

There was a faint hissing sound.

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Startled, Trigger looked around. Sudden scent of not-quite-perfume—

Oh, no! Not again!

The pilot spread his hands, almost apologetically. "They don't take chances! We might as well sit down."

He did. Blethro was staggering backwards; the gun fell from his hand. Trigger stood braced for an instant against the armrest of the control chair, felt herself slide down beside it, while the pilot's voice seemed to go on, drawing slowly off into distance: ". . . told you . . . it . . . would . . . do . . . no . . ."

IV

Again she came awake.

This was a gradual process at first: the expanding half-awareness of awakening—a well-rested, comfortable feeling. But then came sudden knowledge of being in a dangerous situation. There was a shield which guarded her mind, and that now had drawn tight as if it sensed something it didn't like. Full recollection returned as she opened her eyes.

She was in a day-bright room of medium size with colored crystal walls, unfurnished except for a carpet and the couch on which she lay. The day-brightness wasn't the natural kind; the room had no windows or viewscreens. There was one rather small square scarlet door which was closed. The room was silent aside from the minor sounds made by her own motions and breathing. She wasn't wearing the clothes she'd had on but a short-sleeved sweater of soft gray material, and slacks of the same material which ended in comfortably fitting boots.

Probably, though not necessarily, she was on the solar satellite which had hauled in the unpowered yacht with its unconscious pilot and passengers. Rasolmen was an open system. It had no planets and very little space debris. It did have, however, a sizable human population whose satellites circled the magnificent sun along their charted courses, as occasional retreats or permanent residences of people who liked and could afford that style of living. Large yachts sometimes joined them for a few weeks or a year. There was almost no commercial shipping in the system beyond that which tended to the requirements of the satellite dwellers.

If the purpose had been only to silence her, it would have been simpler to kill her than to bring her here. So they must want to find out how much she'd learned about their operation, and whether she'd talked to others before she was caught.

It seemed a decidedly sticky situation, but she wasn't improving it by lying where she was until someone came to get her. Trigger got off the couch and went over to the scarlet door. There was a handle. She turned it, and the door swung open into a dark corridor with walls and floor of polished gray mineral in which there were flickering glitters. She moved out into the corridor.

Not many yards away, the corridor

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opened on a room which seemed to be of considerable size. Through the room poured a river of soundless fires, cascading down through the air, vanishing into the carpeting.

Trigger stood watching the phenomenon. Its colors changed, sometimes gradually, sometimes in quick ripples and swirls, shifting from yellow through pink and green to sapphire blue or the rich magenta blaze of the Rasolmen sun. No suggestion of heat or cold came from the room, no crackle of energy. It seemed simply a visual display.

She started cautiously toward the room. There was no other way to go; the corridor ended beside the door through which she'd come. Immediately, the flow shifted direction, surged toward her and became a fiery wall, barring her from the room.

Less sure now that it was only a display, Trigger waited, ready to retreat through the door. But when nothing more happened, she moved forward again. Again the phenomenon responded. It blurred, reformed as a vortex, lines of dazzling color spiraling swiftly inward to a central point which seemed to recede farther from her with every step she took. Trigger shook her head irritably. There was a strong hypnotic effect to that whirling mass of light. For a moment, she'd come to a stop, staring into it, her purpose beginning to fade from her mind. But warned now, she went on.

And the vortex in turn drew back, away from her, freeing the entry to the room. Once more it changed, became the descending river of fire it had first appeared to be. Faces and shapes came sweeping down with the flow, sometimes seen distinctly, sometimes only as dim outlines within it. They whipped past, now beautiful, now horrible, growing more menacing as Trigger came closer. Then another abrupt blurring; and what took form was a squat anthropoid demon, mottled and hairless, with narrow pointed ears, standing in the room. He wasn't as tall as Trigger, but he seemed almost as broad as he was tall; and his slanted cat eyes were fixed avidly on her. The image was realistic enough to give her a start of fright and revulsion. Then, as she reached the room, it simply vanished. There was a musical giggle on her right.

"You're hard to scare, Trigger!"

"Why were you trying to scare me?" Trigger asked.

"Oh, just for fun!"

She might be twelve or thirteen years old. A slender, beautiful child with long blond hair and laughing blue eyes. She closed the instrument she'd been operating, an instrument about which Trigger hadn't been able to make out much except that it seemed to have multiple keyboards.

"I'm Perr Hasta," she announced. "They told me to watch you until you woke up, and I've been watching almost an hour and you were still just lying there, and it was sort of boring. So I started playing with my image-maker, and then you did wake up, and I wanted to see if I could scare you. Did I?"

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"For a moment at the end," Trigger admitted. "You have quite an imagination!"

Perr Hasta seemed to find that amusing. She chuckled.

"By the way," Trigger went on, "who are 'they'?"

"They're Torai and Attuk," said Perr Hasta. "And don't ask me next who Torai and Attuk are because I told them when you woke up, and I'm to take you to see them now. They can tell you."

"Do you live here on the satellite?" Trigger asked as they started toward a doorway.

"How do you know you're on the satellite?" Perr said. "That was hours ago they brought you there. They could have taken you somewhere else afterwards."

"Yes, I suppose so."

Perr smiled. "Well, you *are* still on the satellite. But don't think you can make me take you to a boat lock. Torai is watching you now, and we'd just run into force screens somewhere. She's anxious to talk to you."

"I wouldn't want to disappoint her," Trigger said.

Attuk was a rather large, healthy-looking man with squared features and a quite bald head, who dressed with casual elegance and gave the impression of enjoying life thoroughly. Torai appeared past middle age—a brown-skinned woman with a handsome face and fine dark eyes. Her clothes and hair style were severe, but her long fingers glittered with numerous rings. Something ornate, which might have been a musical instrument in the general class of a flute, or perhaps a functional computer control rod, hung by a satin strap from her belt. Trigger decided it was a computer control rod.

A place had been set for Trigger at a small table near the center of the room, and refreshments put out—fruit, a chilled soup, a variety of breads, two loaves of meat. The utensils included a sizable carving knife.

The others weren't eating. They sat in chairs around the wide green and gold room, which had a number of doors and passages leading from it. Torai was closest to Trigger, some fifteen feet away and a little to Trigger's left. Perr Hasta, beyond Torai, had tilted her chair back against the wall, feet supported by one of the rungs. Attuk was farthest, on Trigger's right, beside a picture window with an animated seascape at which he gazed when he wasn't watching Trigger.

"I had the impression," Torai remarked, "that you recognized me as soon as you saw me."

Trigger nodded. "Torai Sebaloun. I've seen pictures of you. I've heard you're one of the wealthiest women on Orado."

"No doubt I am," Torai said. "And Attuk and Perr Hasta are my associates in the Sebaloun enterprises, though the fact isn't generally known."

"I see." Trigger sliced a sliver of

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meat from one of the loaves and nibbled at it.

"You created something of a problem for us, you know," Torai went on. "In fact, it seemed at first that it might turn into a decidedly serious problem. But we moved in time, and had some good fortune in those critical first few hours besides. You've talked freely meanwhile and told us what we needed to know. You don't remember that, of course, because at the time you weren't aware of doing it. At any rate, there's nothing to point to us now—not even for the Psychology Service's investigators."

Trigger said, "I've seen something of the Service's methods of investigation. Perhaps you shouldn't feel too sure of yourself."

Attuk grunted. "I must agree with our guest on that point!"

"No," Torai said. "We're really quite safe." She smiled at Trigger. "Attuk favors having Telzey Amberdon picked up, to find out what she can tell us about the Service's search for you. But we aren't going to try it."

"It would be a sensible precaution," Attuk observed, looking out at the restlessly stirring seascape. "We could have a new mercenary group hired, with the usual safeguards, to do the job. If anything went wrong, we still wouldn't be involved."

Torai said dryly, "I'd be more concerned if nothing went wrong and she were delivered safely to our private place!" She looked at Trigger. "We obtained a dossier on Amberdon, as we previously had on you. What we found in it hardly seemed disturbing. But what you've told us about her is a different matter. It appears it would be a serious mistake to try to maintain control over a person of that kind."

Attuk made a disparaging gesture. "A mind reader, a psi! They can be handled. I've done it before."

"Well, you are not having that particular mind reader brought to the satellite for handling!" Torai told him. "The information we might get from her isn't worth the risk. She can't harm us as long as we keep well away from her. My decision on that is final. To get back to you, Trigger. Your interference made it necessary to terminate the very lucrative Marell operation at once. Now that it's known such a world exists, we can't afford to retain any connections with it."

Trigger said evenly, "I'm glad about that part, at least! You three have all the money you can use. You had no possible excuse for exploiting the Marells. They're as human as you are."

They stared at her a moment. Then Attuk grinned and Perr Hasta chortled gleefully.

"That's where you're mistaken," said Torai Sebaloun.

Trigger shook her head. "I don't think so."

"Oh, but truly you are! The Ma-

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rells may be human enough. We aren't."

The statement was made so casually that for a moment it seemed to have almost no meaning. Then there was a crawling between Trigger's shoulder blades. She looked at the smiling faces in turn. "Then what are you?" she asked.

Torai said, "It may sound strange, but I don't know what I am. My memory never goes back more than fifty or sixty years. The past fades out behind me. I keep permanent records to inform me of past things I should know about but have forgotten. And even the earliest of those records show that I didn't know then what I was. I may have forgotten that very long ago." She looked over at Attuk. "Attuk isn't what I am, and neither is Perr Hasta. And neither of them is what the other is. But certainly none of us is human."

She paused, perhaps expectantly. But then, when Trigger remained silent, she went on. "It shouldn't be surprising, really. A vast culture like this one touches thousands of other worlds, often without discovering much about them. And it alerts and attracts other beings who can live comfortably on its riches without revealing themselves. An obvious form of concealment, of course, is to adopt or imitate the human form. With intelligence and experience and sufficiently long lives, such intruders can learn in time to make more effective use of the human culture than most humans ever do."

Trigger cleared her throat, then: "There's something about this," she remarked, "that doesn't fit what you're telling me."

"Oh?" Torai said. "What is it?"

"Torai Sebaloun herself. The Sebaloun family goes back for generations. It was a great financial house when the War Centuries ended. It's less prominent now, of course, but Torai must have been born normally. Her identification patterns must be on record. She must have grown up normally. Where a member of the Sebaloun family was involved, nothing else could possibly have escaped attention. So how could she be at the same time a long-lived alien who doesn't remember what it really is?"

Torai said, "You're right in assuming that Torai Sebaloun was born and matured normally. I sought her out when she was eighteen years old. I'd been watching her for some time. She was a beautiful woman, in perfect health, intelligent as were almost all members of the Sebaloun line, and wealthy in her own right, not to mention her family's great wealth. So I became Torai Sebaloun."

"How?"

"I transferred my personality to her. The body I'd been using previously died. I forced out Torai's personality. I acquired her body, her brain and nervous system, with its established habit patterns and memories. I was Torai Sebaloun then, and I let the world grow gradually accustomed to the various modi-

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fications I wanted to make in its image of her. There were no problems. There never are.

"That's how I exist. I'm a personality. I take bodies and use them for a while. Before I discovered human beings, I was using other bodies. I know that much. And when my host body no longer seems satisfactory, I start looking around for a new one. I'm very selective about that nowadays, as I can afford to be! I want only the best."

She smiled at Trigger. "Of late, I've been looking again. I was on Orado when you took my property from Blethro. Since he's shown himself to be a most capable individual, I was interested in the fact that you'd been able to do it. As soon as we had your name, I was supplied with a dossier on you. I found that even more interesting, though it left a number of questions unanswered. So I had you brought to our satellite to make sure of what I'd come across. You've had a medical examination during the past hours, which confirms that you're in superior physical condition. Our interrogation revealed other excellencies. In short, I find no disqualifying flaw in you."

Trigger glanced at the other two. They had the expressions of detachedly interested listeners.

She told Torai carefully, "Perhaps you'd better go on looking! There are obvious reasons why it wouldn't be advisable for you to try to take over my identity."

"No, I couldn't do that," Torai agreed. "So this time we'll create a new one. Your appearance will be surgically altered. So will your identification patterns. And, of course, I don't intend to give up the Sebaloun empire. All the necessary arrangements were made some while ago. Torai is the last of her family, and her sole heiress is a young protégée to whom the world will be gradually introduced after Torai's death. All that remained then was to find the protégée. And now—"

Torai broke off.

Barely fifteen feet between them, Trigger had been thinking. She could be out of her chair and across that distance in an instant. Attuk sat a good eight yards away. Perr Hasta, relaxed, chair tilted back against the wall, could do nothing to interfere.

Then, with the carving knife held against the brown neck of Torai Sebaloun, and Torai herself held clamped back against Trigger, they could bargain. Torai was in charge here; and whether it was insanity that had been speaking or an entity which, in fact, could make another's body its own, Torai obviously placed a high value on her life. She could keep it, on Trigger's conditions.

So, as Torai seemed about to conclude the outline of her plans for Trigger, Trigger came out of the chair.

She'd almost reached Torai when something stopped her. It was neither solid barrier nor energy screen; there was no jolt, no impact—all she

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felt was its effect. She could come no closer to Torai, whose face showed startled consternation and who'd raised her hands defensively. Instead, she was being forced steadily away. Then she was lifted into the air, held suspended several feet above the carpet, and something pulled at her right arm, drawing it straight out to the side. She realized the pull was on the blade of the knife she still held; and she let go of it, which was preferable to getting her fingers broken or having her arm hauled out of its socket by what she knew now must be an interacting set of tractor beams. The knife was flicked away and dropped lightly to the surface of the little lunch table.

Torai Sebaloun was smiling again. Her hands remained slightly raised, fingers curled, knuckles turned forward, toward Trigger; and all those glittering rings on her fingers clearly had a solid functional purpose.

"Quick! Oh, she was quick!" Perr Hasta was saying delightedly. "You were right about her, Torai!"

"Yes, I was right." Torai didn't turn her eyes away from Trigger. "And still she was almost able to take me by surprise! Trigger, it was obvious from what we'd learned about you that at some early moment you'd try to make me your hostage. Well, you've tried!"

Her fingers shifted. Trigger was carried back across the room, still held clear of the carpet, lowered and set on the edge of a couch against the far wall. The intangible beam complex released her suddenly; and Torai dropped her hands and stood up.

"The transfer is made easier by suitable preparations," she said, "and they've now begun. It's why I told you what I did. A personality that knows what is happening is more readily expelled than one which has remained unaware and unsuspecting until the last moment. You may not yet believe it's going to happen, but you won't be able to avoid thinking about it; and that's enough to provide a satisfactory level of uncertainty. Meanwhile, be at liberty to discover how helpless you are here, in fact, in every way. I'll be engaged in sensitizing myself to the personal articles I had brought to the satellite with you."

Perr Hasta also had come to her feet. "Then I can go to Blethro now?"

Torai shrugged. "Why not?"

She turned toward a door. Perr Hasta darted across the room to another door, pulled it open and was gone through it. Attuk got out of his chair, glanced at Trigger and smiled lazily as he started toward a hallway.

Somewhat incredulously, Trigger realized that they were leaving her here by herself. She watched Torai open the door, got a brief glimpse of the room beyond it before Torai shut it again. Attuk had gone off down the hall.

She looked around. The lunch table was sinking through the richly

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patterned carpet, accompanied by the chair she'd used. Both were gone before she could make a move to recover the knife. The seascape Attuk had studied shut itself off. The chair on which Torai had been sitting followed the example of the lunch table. The one used by Perr Hasta moved ten feet out from the wall, did a sharp quarter turn to the left and remained where it was. The green and gold room was rearranging itself, now that three of its four occupants had left.

Possibly she didn't rate as an occupant of sufficient significance to be considered. Trigger got up from the couch and started toward the door left open by Perr Hasta. She glanced around as she got there. The couch had flattened down and was withdrawing into the wall.

From the doorway, she looked out at a vast sweep of wilderness—a plain dotted with sparse growth, lifting gradually to a distant mountain range. Somewhat more than a hundred yards away, Perr Hasta was running lightly toward a great sloping boulder. A dark rectangle at the base of the boulder suggested a recessed entrance.

Blethro was there? What *was* this place?

Perr Hasta could answer that. Trigger set off in pursuit.

She checked almost at once. For an instant, as she came through the door, she'd had the impression of the curving walls of a large metallic domed structure, in which the door was set, on either side of her. Then the impression vanished; and, looking back in momentary bewilderment, she saw neither structure nor door, but only the continuation of the great plain on which she stood.

No time to ponder it. Perr Hasta already was halfway to the boulder. Trigger started out again—and, within a hundred steps, she again slowed to a stop, rather abruptly. What halted her this time was the sudden appearance of a sheet of soft, rosy light in the air directly ahead. She'd come up to a force screen. And the whole view beyond the screen had blurred out.

V

When she passed through the door leading from the green and gold room, she'd entered a maze, a series of stage settings blending a little of what was real with much more that was projected illusion. To the eye, the blending was undetectable, and other senses were played upon as skillfully. Force screens formed the dividing walls of the maze, unnoticed until one reached them, responding then with a soft glow which extended a few feet to right and left. Trigger would turn sideways to such a screen, feeling its slick coolness under her fingertips, and move on along it, accompanied by the glow. Perhaps within a dozen yards, the screen would be gone, and she'd find herself in another part of the maze with a different set of illusions about

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her—and, presently, other force screens to turn her in new directions.

She'd simply kept moving at first, trying to walk her way out, while she watched for anything that might be an indication to the pattern of the maze. One point became apparent immediately. She couldn't go back the way she had come; the maze's transfer mechanisms operated only in one direction. She passed through a forest glade where a light rain dewed her hair and sweater, and a minute later, was walking along the crest of a barren hill at night, seeing what might be city lights in the distance, while thunder growled overhead. Then a swamp steamed on either side and sent fog drifting across her path. Sounds accompanied her—animal voices, an ominous rustling in a thicket, sudden loud splashes. Something else soon became established: nothing had been left lying carelessly around here that might be considered a weapon. Trigger saw stones of handy size and broken branches, but they were illusion. Vegetation that wasn't illusion was artificial stuff which bent but wouldn't break. She hadn't been able to pull off even a leaf or pry loose a tuft of springy moss.

The settings presently took on an increasingly bizarre aspect. A grotesquely costumed bloated corpse swung by its neck from a tree branch, turning slowly as Trigger went by below. Immediately afterwards, she was in a place where she saw multiple replicas of herself all about, placed in other scenes. In one, she swayed in death beside the bloated horror, suspended from the same branch. In another, she strode across a desert, unaware of a gaunt gray shape moving behind her. An on-the-spot computer composition, initiated by her appearance in this part of the maze—

A few minutes later, she sat down on a simulated beach. There was nothing bizarre here. The white sand was real, and water appeared to sweep lazily up it not many yards away. Sea smells were in the windy air; and there were faint sounds which seemed to come from flying creatures circling far out above the water.

The maze section she'd just emerged from was one she'd passed through before. The illusion view had been new, but she'd recognized the formation of the ground. And when she'd gone through it before, she hadn't come out on the beach.

So the maze wasn't a static construction. The illusion views could be varied and exchanged, and there might be easily thousands of such views available. The positions of force screens and transfer points could be shifted, and had begun to be shifted. The actual area of the maze might be quite limited; and still she could be kept moving around in it indefinitely. If she came near an exit point, she could be deflected past it back into the maze. In fact, nobody needed to be watching

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to take care of that. The controlling computer would maneuver her about readily enough if that was intended.

Whatever purpose such an arrangement served the satellite's owners, it was no friendly one. The multiple-image area showed malice; a number of displays were meant to shock and frighten. Others must have walked in the maze before this, bewildered and mystified, while their reactions were observed. She'd been tricked into entering it as she attempted to follow Perr Hasta, perhaps to reduce her resistance and make her more easy to handle.

At any rate, she had to get out. The satellite was a complex machine; the machine had controls. The smaller the staff employed by Torai Sebaloun—and there'd been no indications of any staff so far—the more intricate the controls must be. Somewhere such a system was vulnerable. But she had no more chance here to discover its vulnerabilities and try to change the situation in her favor than she would have had behind locked doors.

Therefore, do nothing. Stay here, appear reasonably relaxed. If somebody was studying her reactions as seemed likely, that couldn't be too satisfactory; and if they wanted to prod further reactions out of her, they'd have to make some new move. Possibly one she could turn to her advantage.

"Hello, Trigger!" said Perr Hasta.

Trigger looked around. The blond child figure stood a dozen feet away.

"Where did you come from?" Trigger asked.

Perr nodded at a stand of bushes uphill, which Trigger had reason to consider part of the beach scene's illusion setup. "I saw you from there and thought I'd come find out what you were doing," Perr said.

"A short while ago," Trigger remarked, "there was a force screen between that place and this."

Perr smiled. "There still is! But there's a way around the screen if you know just where to turn—which isn't where you'd think you should turn."

She sat down in the sand, companionably close to Trigger. "I've been thinking about you," she said. "There's an odd thing you have that didn't want you to be hypnotized."

Which seemed to be a reference to the Old Galactic mind shield. Trigger didn't intend to discuss that, though she might already have told them about it. "I've never been easy to hypnotize," she said.

"Hm-m-m," said Perr. "Well, we'll see what happens. You're certainly unusual!" She smiled. "I was hoping Torai would let Attuk bring your psi friend here. It should have been an interesting situation."

"No doubt."

"Of course, Attuk doesn't really care what Telzey knows," Perr went on. "Her dossier shows what she looks like, and Attuk forms these

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sudden attachments. He can be quite irresponsible then. He formed a strong attachment to you, too—but you're Torai's! So Attuk's been sulking." She chuckled.

Trigger looked at her. The three of them might be deranged. "What kind of being is he?" she asked, as casually as she could.

"Attuk?" Perr shrugged. "Well, he is what he is. I don't know what it's called. A crude creature, at any rate, with crude tastes. He even likes to eat human flesh. Isn't that disgusting?"

"Yes, I'd call it disgusting," Trigger said after a moment.

"He says there was a time when he had human worshipers who brought him human sacrifices," Perr said. "Perhaps that's when he developed his tastes. I'm sure he'd like it to be that way again, but it's not so easy to arrange now. So he makes himself useful to Torai and she keeps him around."

"How is he useful to her?" Trigger asked.

"This way and that," said Perr.

"What are you, Perr?"

Perr smiled, shook her head. "I never tell anyone. But I'll show you what I do, if you like. Would you? We'd have to leave the playground."

"This is the playground?" Trigger said.

"That's what we call it."

"Where would we go?"

"To the residence."

"Where I was before?"

"Yes."

Trigger stood up. "Lead the way!"

Getting out of the maze without running into force screens was, as Perr Hasta had indicated, apparently a matter of knowing where to turn. The turning points weren't detectably marked and there seemed to be no pattern to the route, but in less than two minutes they'd reached an open doorway with a room beyond. They went through and closed the door. There was nothing illusory about the room. They were back in the residence.

"Torai controls the satellite from the residence?" Trigger asked.

Perr gave her a glance. "Well, usually that's where she is. But she could control it from almost anywhere on it."

"Ordinarily that's done from a computer room."

"We go through here, Trigger. No, hardly anyone goes to the computer room. Only when something needs adjusting or repairs. Then Torai has someone brought out to do it."

"You mean you don't have a computer technician on hand?" Trigger said. "What would happen to the satellite if your main computer broke down?"

"Goodness. There're *three* main computers. Any one of them could keep the satellite going perfectly by itself—and they're hardly likely to break down all together, are they? Here we are!" Perr stopped at a passage door and slid back a panel covering a transparent section in the up-

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per part. "There! That's what I do, Trigger."

The room was small and bare. Blethro sat on a bench with his back against the wall, facing the door. His hands were loosely folded in his lap. His head lolled to the side, and a thread of spittle hung from a corner of his mouth. His eyes were fixed on the door, but he gave no sign of being aware of visitors.

"What have you done to him?" Trigger said after a moment.

Perr winked at her.

"I drank what Torai would call his personality," she said. "Oh, not all of it, or he'd be dead. I left him a little. He can sit there like that or stand, or even walk if he's told to. But I took most."

Drugs could account for Blethro's condition, but Trigger felt a shiver of eeriness.

"Why did you do it?" she asked.

"Why not? It was a kindness really. They weren't going to let Blethro live. He's Attuk's meat. But that won't bother him now." Perr Hasta slid the window shut. "Besides, that's what I do: absorb personalities or whatever it is that's there and different in everybody. Some seem barely worthwhile, of course, but I may take them while I'm waiting for a prime one to come along. Or I'll sip a bit here and there. That's barely noticeable. I'm not greedy, and when I find something that should be a really unusual treat, I can be oh-so-patient until the time comes for it! But then I have a real feast!" She smiled. "Would you like me to show you where the computer room is?"

Trigger cleared her throat. "Why do you want to show me that?"

"Because I think you want to know. Not that it's likely to do you much good. But we'll see. It's this way, Trigger."

They went along the passage. Perr glanced sideways up at Trigger. "Blethro wasn't much," she remarked. "But you have a personality I think I'd remember for a long, long time."

"Well, keep away from it," Trigger said.

"That odd mind thing of yours couldn't stop me," Perr told her.

"Perhaps not. There might be other ways to stop you."

Perr laughed delightedly. "We'll see how everything goes! We turn here now. And that's the passage that leads to the computer room. The room's probably locked though—"

She took a step to the side as she spoke, and a door that hadn't been noticeable in the wall was suddenly open, and Perr Hasta was going through it. Trigger reached for her an instant too late. She had a glimpse of the smiling child face turned back to her as the door closed soundlessly. And even before she touched it, Trigger felt quite sure there'd be no way in which she could reopen that door. Its outline had disappeared again, and there was nothing to distinguish it from the rest of the passage wall.

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VI

There was another door at the end of the passage Perr Hasta had said led to the computer room. The computer room might very well lie behind it. It was a massive-looking door; and while there were no visible indications of locks, it couldn't be budged.

Its location, at any rate, was something to keep in mind. And now, before she ran into interference, she'd better go through as much of the residence area as possible to see what useful articles or information it might provide.

The search soon became frustrating. The place seemed to be laid out like a large house with wings, extending through a number of satellite levels. Some of the doors she came to along the passages and halls wouldn't open. Others did. The rooms they disclosed were of such widely varying styles that this might have been almost a museum, rather than a living place furnished to someone's individual preferences. As a rule, very little of the furnishing would be in sight when Trigger first came into a room; but it began to emerge from walls and flooring then, presenting itself for use. The computers were aware of her whereabouts.

Unfortunately, they weren't concerned with her needs of the moment. Nothing they offered was going to be of any help on the Sebaloun satellite. There must be some way of controlling the processes, but she didn't know what it was. Verbal instructions produced no effect.

She came back presently to the green and gold room to which she'd been conducted when she came awake. The door through which Torai had gone was closed. Trigger glanced at it, went to the passage along which Attuk had disappeared. The first door she opened there showed a fully furnished room. Something like an ornate bird cage with a polished black nesting box inside was fastened to one wall about five feet above the floor; and standing in the cage, grasping a bar in either hand, and gazing wide-eyed at Trigger as she peered around the door, was Salgol.

She came quickly inside, drew the door shut and went to the cage. "Where are Smee and Runderin?"

Salgol nodded at the box. "In there. They're afraid of these people!"

"I don't blame them." Trigger gave him a low-voiced condensed account of her experiences. Runderin and Smee came out of the box while she was talking, and Salgol passed the information on in the Marell language. "Do you think they really aren't human?" he asked.

"I don't know what to think," Trigger admitted. "So far I've seen no evidence for it. But at any rate, it's a bad situation because they control the satellite. They may not intend to harm you three physically."

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"We'd still be prisoners, and that's bad enough," Salgol said. "Isn't there something we can do to help?"

"There might be. Let's see if I can open the cage lock."

The lock wouldn't open, but Trigger found she could bend the bars with her hands. She pried two of them far enough apart to let Salgol squeeze through. "Now," she said, "I know where Torai probably is keeping my gun. If you found it, do you think you could move it?"

"Perhaps not by myself. But two of us could." Salgol spoke to his companions. They replied quickly in voices like miniature flutes. "They both want to help," he told Trigger.

"Good. But if two of you can handle the gun, one of them will help best by staying in the cage."

"Why that?"

"To make it seem you're all still there, in case someone comes into the room."

Salgol spoke to his companions again, reported, "Runderin will come. She's the stronger. Smee will stay."

Runderin peeled out of her colorful but cumbersome outer clothes, and Salgol took off his purple coat. They arranged the clothing in the sleep box so it could be seen indistinctly by someone looking into the cage. Then the two squirmed out between the bent bars, and Trigger set them on the floor. She squeezed the bars back into place, gave Smee, who was now sitting on display in front of the box and looking rather forlorn, a reassuring smile, and left the room with two Marells tucked under her sweater.

The reduced furnishings in the green and gold room would have given her no place to hide; but Salgol and Runderin were quickly concealed behind chair cushions near the door Torai had used. From what Torai had said, Trigger's personal belongings should be in the room beyond the door. If she came out and left the door open, the two would try to get the gun as soon as she was out of sight. If they found it, they'd hide it and wait for an opportunity to let Trigger know where it was.

With the gun, she might start to even up the odds around here rather quickly.

Trigger resumed her wary prowling. The Sebaloun residence remained silent. In empty-seeming rooms, the satellite's mechanisms responded to her presence and produced the room equipment for inspection. She inspected, went on.

Then a door let her into a wide low hall. Not far ahead, the hall turned to the right; and on the far side of the turn was another door. Trigger stood listening a moment before she went down the hall, leaving the door open behind her. Thirty feet beyond the turn, the hall was open on a garden. She glanced over at it, went to the door in the far wall, and found it locked.

She'd had no intention of check-

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ing the garden, nor did she go into the branch of the hall that led to it. It seemed too likely it would prove to be another trick entry point to their playground maze. But as she came back to the door by which she'd entered the hall, she found it blocked by a force screen's glow.

It sent a jolt of consternation through her, though it had been obvious that the satellite's masters would act sooner or later to limit her freedom of motion. But if the only exit from the hall was now the garden, and if the garden was in fact part of the maze, she'd been driven back to her starting point. Venturing a second time into those shifting computer-controlled complexities would be like stepping deliberately into quicksand.

She went part way down the branch of the hall and looked out at the garden from there. It was of moderate size, balanced and beautiful, laid out in formal lines. A high semicircular wall enclosed it; and above the wall was the milky glow of a light dome. There was no suggestion of illusory distances.

It might be part of the residence, and not a trap. But Trigger decided she wouldn't take a chance on it while she had a choice. If she stayed where she was, something or other must happen presently.

And then something did happen.

Abruptly, the figure of a man appeared on one of the garden paths, facing away from Trigger. He glanced quickly about, turned and took a few steps along the path before he caught sight of her.

It was Wrann, the Sebaloun detective who'd engineered her kidnapping in the Orado City hotel.

VII

Trigger watched him approach. He showed marks of their encounter on the yacht—bruises around the eyes and a plastic bandage strip along the side of his head where she'd laid him out with the barrel of his gun. Wrann's feelings toward her shouldn't be the friendliest, but he was twisting his mouth into an approximation of a disarming grin as he came quickly through the garden toward her. He stepped up into the hall, stopping some twelve feet away. She relaxed slightly.

"I'll be as brief about this as I can," he said. "My employers haven't forgiven me for nearly letting you and Blethro get away. I'm in as bad a position as you two now! I suggest we consider ourselves allies."

"Somebody may be listening," Trigger said.

"Not here," Wrann told her. "I know the place. But they may find out at any time that I'm no longer locked up and block our chance of escape. Minutes could make the difference!"

"We have a chance of escape?"

"At the moment," he said impatiently. "The delivery yacht we arrived in has left. It never stays long. But there's a separate spacelock

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where Sebaloun keeps her private cruiser. Unfortunately, I found an armed guard there. I didn't expect it because they rarely allow personnel on the satellite when they're here themselves. Sebaloun may have considered the circumstances unusual enough to have made an exception. At any rate, the man is there. I didn't let him see me. He knows me and isn't likely to know I'm no longer Sebaloun's trusted employee. But he'd check with her before letting me into the lock. So I came back to get a weapon."

"You know where to find a weapon?"

"I know where Attuk keeps his guns. It seemed worth the risk of being seen."

"It probably would be," Trigger agreed. "But unless you can unlock that door over there, we can't get into the residence from this hall. The other door's sealed with a force screen. Or was, a few minutes ago, after I came out here."

Wrann looked startled. "Let's check on that!"

The force screen was still present; and Wrann said he didn't have the equipment to unlock the other door. "I'm afraid we'll have to forget about Attuk's guns!"

"Why?" said Trigger. "You know your way around here. Can't we go to another entry to the residence?"

Wrann shook his head. "I wouldn't want to try it! The garden's part of a mechanism they call their playground—"

"I've been there," Trigger said. "A maze effect."

"Yes, a maze effect. When somebody's let into the maze unaccompanied by one of the residents, the controlling apparatus develops an awareness of the fact and begins to mislead and confuse the visitor."

"How did you get through it just now?"

Wrann said, "I've been shown the way. I've had occasion to use it. And I didn't stay in the playground long enough to activate the mechanisms significantly. Working around to another residence entry would be another matter!" He shook his head again. "We'd never make it!"

Trigger said, "We do have to go through the playground to get to the lock?"

"It's the only way that isn't blocked for us." Wrann looked at her. "I *can* get us there! Between us, we shouldn't need a weapon to take the guard."

"You're Torai's detective; I'm the prisoner, eh?"

"Right. I'm to put you on the Sebaloun cruiser. You have your hands on your back. When we get to the guard, you create a diversion." Wrann grinned sourly. "You'll think of something! I jump the guard. We can be off the satellite two minutes later."

Leaving the Marells behind. Trigger said, "And then?"

"We get in touch with the authorities immediately. I don't want to give Sebaloun a chance to get off the sat-

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ellite. With luck, we'll be back with the law before she even knows we're gone."

Trigger said, "Don't you have a few things to hide yourself, Wrann?"

"Normally I'd have enough to hide," he agreed. "I understand your suspicions. But I have no choice! We're dealing with very dangerous people, Miss Argee! How long do you think I'd live—or you, for that matter—if those three stay at large, and the Sebaloun money is looking for us? As of now, I'll be glad to settle for Rehabilitation!"

Trigger nodded. "All right. Let's go! It could be a trap, of course."

Wrann looked startled. "What do you mean?"

"That door mightn't have been sealed because I was in the hall but because someone knew you were on your way back to the residence."

"I see. We'll have to risk that." Wrann added as they started down into the garden. "Stay close behind me! I'll hurry as much as I can, but we must be careful. Setting off even one force screen would alert the playground—and then we'll have had it!"

Wrann moved quickly, if cautiously, sometimes half running, rarely hesitating for more than a moment. Trigger concentrated on following in his steps. The maze remained silent and unresponsive as half a dozen illusion scenes slipped past. A stretch of flowering meadow was briefly there, and twice patches of mossy turf where Wrann's greater weight made him sink in almost ankle deep at every step, though Trigger didn't have much difficulty.

Then he vanished ahead of her again. She slowed, carefully took the same stride she'd watched him take—and went stumbling through pitch-blackness. She caught her balance, stood still, feeling sand under the soles of her boots.

"Wrann?" she said quietly.

There was no reply. Her heart began to race. Dry, musty odors, warm stirring of air . . . She listened, lips parted, barely breathing, and heard sounds then, soft ones, as if someone moved cautiously over the sand. The sounds didn't seem close to her.

After a moment, they stopped, and Trigger realized the darkness was lifting. A dim, sourceless glow had come into the air. It strengthened slowly into a sullen light; she began to make out something of her surroundings. It looked like a stretch of steep-walled gully filled with sand, a dry watercourse. No way to tell yet what part was real, what part was illusion.

Then she saw something else. A shape stood on the other side of the gully, farther along it, back against the overhanging rock wall.

It didn't move. Neither did Trigger, watching it, between moments of scanning the sand about her. A simulated dry watercourse might have contained some real rocks, and she would have felt better with a rock in either hand at the moment. She saw nothing but sand.

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She didn't think that shape was Wrann.

The glow strengthened again. The shape remained motionless and indistinct; but an abrupt jolt of fright had gone through her, for now she recognized the squat demon figure Perr Hasta's image maker had showed her after she came awake. The thought that Perr was at play again flicked up, but she discarded it at once. The image maker had been used to introduce her to the satellite. It wouldn't be involved here.

With that, she saw the anthropoid creature move away from the gully wall, start slowly toward her. There was a point some twenty feet to her left where the rock bank wasn't too steep. She should be able to scramble up there, but she didn't want to try it yet. She didn't know what was above; a blur of light shrouded the upper levels of the gully. She looked back. The watercourse seemed to twist out of sight beyond its bank fifty feet away. She thought she was likely to meet a force field before she got nearly that far.

She could see the approaching anthropoid more clearly now than she liked. The dwarfishly broad body looked tremendously strong. He made crooning sounds which at moments seemed almost to become slurred words. The yellow eyes stared. Trigger felt a surge of revulsion, began to back away. He continued his unhurried advance as if he knew she wasn't retreating far—and once those great hands closed on her, all her skills weren't likely to be of much further use . . .

There was the glow of a force field behind her.

Trigger edged toward the left along the glow. The stalking creature angled in slowly to corner her between screen and bank. She shifted to the right and, as he swerved, back to the left. He came at her suddenly then, thick arms reaching, and she ducked, scooping up two handfuls of sand, slashed sand full into the yellow eyes, and was past him.

She heard snarling as she made a dash for that not-quite-vertical section of the gully's bank, scrambled a dozen feet up it, and stopped. A screen had acquired glowing visibility overhead. She looked back. The anthropoid had followed, digging at his face with his hands. She dropped down, slipped under his swift lunge. Fingers clawed along her back and almost ripped the sweater from her, but then she was away and coming up with her hands full of sand again. As he swung around after her, she let him have the second dose. He uttered a gurgling howl.

Full daylight flooded the gully. Torai Sebaloun's amplified voice announced from above, "I am seriously annoyed with you, Attuk!"

Trigger, moving back, glanced up. The haze effect was gone. A viewscreen had taken its place; and the enlarged faces of Torai and Perr Hasta were looking down through it.

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Torai appeared very angry, while Perr obviously was enjoying herself. The anthropoid peered up at them, blinking painfully, before he turned and lumbered away. Abruptly, his shape blurred, seemed about to flow apart, then reassembled itself. What it reassembled into was the quite human appearance of Attuk, elegantly clothed. He stalked over to the wall of the gully, vanished into it. The screen had gone blank.

Trigger pulled down her sweater, brushed sand from her palms and turned as Torai and Perr Hasta came walking up the gully behind her.

"So now you know Attuk's a shape-changer!" Perr said smilingly to her. "What you saw here is what we think is his own shape. It's the one he almost always uses when he gets someone into his place in the playground. A crude creature, isn't he? He would have been rather careful with you, of course."

"Careful or not," said Torai, "if he'd damaged the body in the least, I should have killed him! As it is, I'll have to think up a suitable punishment for Attuk. But that can wait." She added curtly to Trigger, "I'm ready to transfer. You'll come along now."

Trigger went along, having no choice in the matter. Torai's ring beams held her hemmed in as she walked ahead of the two, and the beams controlled the pace at which she could and must walk. Once she tried to slow her steps, and they simply lifted her and carried her on a few yards before she was set down to start walking again.

"Attuk did Wrann very well," Perr Hasta was saying chattily from a little behind her. "The voice and manner of speaking, too! Of course, Attuk always is very good with voices."

Torai said, "I'm also somewhat annoyed with you, Perr! You shouldn't have let it go that far. Their bodies can die of fright, as you know. What good would this one have been to me then?"

"Oh, I called you in time!" said Perr. "Trigger's charts show she isn't the kind to die of fright." She laughed. "Wasn't it beautiful, the way she sanded up his eyes?"

The insane conversation went on until they were back in the residence. There Torai's beams steered Trigger into a narrow room and to an armchair set up at its far end, turned her around and placed her in the chair. Torai took the computer control rod hanging from her belt in one hand and brought her thumbnail down on a point near its lower end. The beam effect released Trigger.

"Stretch your hand out toward me," Torai said.

Trigger hesitated, reached out, saw a screen glow appear in the air a few feet ahead of her. She drew back her hand. The glow vanished.

"You're sealed into that end of the room," Torai told her. "So you might as well relax." She turned her rings toward another armchair in the

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room, and the beams drew the chair over to a point opposite Trigger, about twelve feet from her. Torai settled herself in the chair, and Perr Hasta came up and stood beside her, smiling at Trigger.

Torai studied Trigger a moment then, with an expression that seemed both hungry and contented. She nodded slowly.

"Yes, a good selection!" she remarked. "I should be well satisfied with that one. And I see no reason for further delay." She leaned back and closed her eyes.

Trigger waited. Presently, something began to happen; and she also shut her eyes to center her attention on it. A sense of eager greed and momentary scraps and bursts of what might be somebody's thinking were pushing into her awareness. She studied them a moment, then started blanking out those impressions with clear strong thoughts of her own which had nothing to do with Torai Sebaloun or the Rasolmen satellite, but with people and events and things far away, back in time. It went on a while. Her defense appeared rather effective, though new Torai thoughts kept thrusting up, quivering with impatience and anger now, until Trigger blanked them away again. The Old Galactic shield remained tight, and it might be Torai hadn't counted on that. Frustration grew in the thoughts still welling into Trigger's awareness; then, abruptly, anxiety and acute alarm.

"Perr—you're not helping! Perr! Perr Hasta!"

No reply from Perr. A sudden soft thumping noise, and Torai screamed once; and Trigger's eyes flew open.

Torai had fallen out of the chair and lay shaking on the carpet; and Perr Hasta was on her knees beside her, peering down into her distorted face with much the same avidity Trigger had seen in Torai's own expression and in the yellow eyes of anthropoid Attuk. Perr looked up at Trigger then, and laughed.

"I knew it!" she said. "She got stuck in that mind thing of yours, Trigger! If she had any difficulty, I was to start absorbing your personality to make it easier for her, but I didn't. She can't get through, and she can't get back."

Perr looked down at Torai again. "And—now, now, now! I've waited a long time for the personality of the Torai thing, and now I'll take it all, and there's nothing it can do about it."

The child face went blank, though a smile still curved its lips; and Perr's body began weaving gently back and forth above Torai.

Trigger got quietly out of her chair.

VIII

If Torai Sebaloun had succeeded in implanting her personality in Trigger's body, she would have found herself behind the force screen which now held Trigger imprisoned at this end of the room,

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with the computer control rod which had switched on the screen fastened by its satin strap to the belt on the dead Torai body on the far side of the screen.

Hence, since Torai must regard Attuk and Perr Hasta as somewhat uncertain allies, there should be a device to release the screen on this side. Trigger had been waiting for an opportunity to start looking for that device; and now, with Torai helpless and Perr Hasta preoccupied, the opportunity was there.

Unfortunately, the switch, button, or whatever mechanism it was, seemed well hidden. Trigger went quickly over the smooth walls, glancing now and then at the two outside. Something that might be Torai's thoughts still flickered occasionally through her mind, but they were barely perceptible, and she no longer bothered to blank them out. Perr Hasta, completely absorbed, showed no interest in what was happening on this side of the screen.

When the walls provided no clue, Trigger began searching the armchair. Engaged with that, she discovered suddenly that Perr was back on her feet and watching her. At the same time, she realized she could sense no more Torai thought impressions, and that Torai, who'd been stirring feebly when she looked last, was now quite motionless. Perr Hasta gave her a slow, dreamy smile.

"Torai was very good!" she said. "Every bit as good as I'd expected! So you'd like to get out?"

"Yes," Trigger acknowledged. "Do you know what I have to do in here to turn off the screen?"

"No."

Trigger bit her lip. "Look," she said. "If you'll take that control rod on Torai's belt—"

"Goodness," said Perr, turning away. "I wouldn't know how to use the thing. Besides, why should I let you out? I must go find Attuk."

She sauntered out of the room, humming. Trigger gritted her teeth and resumed her search. One nightmare was down; but two were still up and around! She had to get out, fast!

A tiny voice cried, "Trigger!"

She jerked about. Salgol and Runderin were dancing up and down on the other side of the glowing screen.

"We found your gun!" Salgol piped. "Is she dead? What is this thing between us?"

Trigger let out a breath of partial relief. "You have my gun? Good! Yes, she's dead, but the other two might show up any time. That's a force screen between us. Now, look—"

She explained rapidly about the computer control rod. She'd been watching Torai and was able to describe exactly where Torai had pressed on the rod to turn on the screen. There must be some kind of switch there.

The Marells confirmed there was a button there. In fact, the rod was covered with grouped rows of tiny buttons. The trouble was that de-

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pressing the button in question proved to be beyond their combined strength. Trigger, watching their struggles, exclaimed suddenly, "Stuff in my handbag!" They looked at her, breathing hard. "Keys!" she went on. "Something Salgol can slam down on the button—"

They'd turned and darted halfway out of the room while she was still speaking. Trigger resumed her investigation of the armchair. It seemed to her she'd already looked everywhere. In frustration, she banged her fist down on the chair's padded backrest. There was a sharp click.

She stood frozen for an instant, swung back toward the screen, reaching out to it.

No glow . . .

No screen!

She stepped through the space where it had blocked her and unfastened the control rod from Torai's belt with shaking fingers. Manipulating the ring beam mechanisms probably would take plenty of practice—no time to bother with that now! She ran out of the room after the Marells.

The playground maze was still trying to be a problem; but the computer rod made the problem rather easy to handle. The force screen controls seemed to be grouped together at one end. When they encountered a screen now, Trigger hit the studs there in quick succession until she came to the one that switched off the screen; and they'd hurry on until checked again. Salgol, Runderin and Smee had no trouble keeping up with her. Her interference with the screens might be confusing the overall maze mechanism. Sound effects soon died away, and the scenery took on a static appearance. At this rate, it shouldn't be long before they'd passed through the playground area.

Force screens, however, might not be the only difficulty. If Attuk was aware Torai's transfer attempt had failed and that Trigger was again free, he could be waiting to intercept her with a gun near the periphery of the playground. He'd said an armed guard had been stationed at the spacelock; and if that was true, she might, in fact, have two guns to deal with before she got off the satellite. When the surrounding scenes began to look unfamiliar, she moved with growing caution.

One more screen went off. Trigger started forward over springy moss, along the side of a simulated weathered stone wall, watching the top of the wall and the area ahead. The Marells followed close on her heels. Some thirty feet on, the wall turned to the right. She checked at the corner. The wall disappeared in dense artificial vegetation not far away. More of the stuff on the left. A path led between the two thickets.

Had a shadow shifted position in the shrubbery at the moment she appeared? Yes. She could make out something there now. It seemed to be a rather small dark shape.

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She glanced down at Salgol who was peering up at her. She whispered, "Be careful, you three!" and started slowly toward the thicket. She stopped again. The shrubbery stirred—the half-glimpsed shape was moving. Something familiar about it?

A hand parted branches; a quite familiar face looked out warily. Telzey's blue eyes went wide.

"Trigger! *You're* here!"

"I didn't know *you* were here, Telzey!"

"I woke up just a few minutes ago!" Telzey shook her head. "Last thing I—"

Trigger said hastily, "Better wait with that! We're on a private satellite, Rasolmen System. Somebody had unpleasant plans for both of us, but I'm on my way to a spacelock now. With luck, if we move fast enough, we can make it!" She turned to the left. "Come on!"

Telzey stepped out from the thicket. Trigger's right hand went under her sweater front, came out with the gun. She shot the Telzey shape through the head, jumped back as it staggered toward her, stitched a line of fire down the front of its body as it fell and began to blur, then stood there, gun held ready, watching it change into something much larger.

Anthropoid Attuk wasn't dead, somewhat to her surprise. But then it was a life form she didn't know much about. It was down, at any rate, making watery sounds as it tried to lever itself up on its thick arms. She leveled the gun at the staring yellow eyes.

"No! Wait!" Perr Hasta, slipping out from the thicket, dropped to her knees beside Attuk. "Attuk, too! Oh, Trigger, I'm grateful! I wanted him almost even more than Torai. Now—"

Her face smoothed into its empty feeding look. There was a tug at Trigger's slacks. She glanced down. The Marells were looking at her, white-faced. "What are those two doing?" Salgol's small voice asked nervously.

Trigger cleared her throat.

"The big one's dying," she said. "The other one's helping it die. It's all right—it may have saved us some trouble."

"How did you know the big one wasn't Telzey?" Salgol asked. "We thought you'd killed her!"

Well, Trigger thought, for one thing Telzey would have discovered I was around moments after she woke up. Unless something had been done to her mind after Attuk had her brought to the satellite. There'd been that doubt . . .

Trigger said, "I was almost sure as soon as I saw her. But, of course, I had to be quite sure. Did you notice how deeply she sank into the moss? She would have had to weigh almost three times as much as I do." She shrugged. "So now we'll let Perr Hasta have her treat!"

Attuk had collapsed meanwhile, and Perr Hasta was bent above him,

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her long silky hair almost concealing his head. Trigger added, "It won't take long. Then I'll talk to her."

Perr Hasta said drowsily, "That should last me quite a time! Why, yes, you're right, Trigger. Your gun would kill me as quickly as it did Attuk. Much more quickly, in fact. My physical structure is delicate and could be easily disrupted. You'd like me to show you to the spacelock? That will be simple. You're already past the screen barriers."

Trigger said, "There's a guard at the lock?"

"No guard," said Perr. She yawned. "Torai had the satellite planned so no humans would be needed on it, except the ones who come to deliver this and that, or to fix something. And, of course, our visitors. My! What a visitor you turned out to be, Trigger! This has been a most interesting experience."

"All right," Trigger said. "No guard. If you're lying, you're likely to go before he does. Blethro first, then. I'm not leaving anything human here. Where is he?"

"Blethro's dead," Perr said. "Attuk's been feeding. I'll take you to what's left, if you want, but you won't like what you see."

"Let's go there anyway," Trigger said.

She didn't like what Perr Hasta presently showed her, but there was no question that it had been Blethro.

"Now we'll go to the spacelock," she said.

They went there. There was no guard. One vessel was docked in the inner lock area, the Sebaloun cruiser, a luxury boat. Trigger motioned Perr Hasta into it ahead of her with the gun, the Marells following. She checked out the cruiser's controls, with Perr standing beside her, decided she understood them well enough. "Back outside, Perr!" she said.

She followed Perr Hasta outside. Lock controls next; and they were simplicity itself, computer directed, the satellite computers responding to the cruiser's signals. No operator required. "Perr—" she began.

Perr wasn't there.

Trigger looked quickly around, skin prickling. She hadn't seen Perr disappear, hadn't been aware of her disappearance. Perr had been there, standing next to her, a bare instant ago. Now Perr was nowhere in sight.

A faint giggle behind her. Trigger turned, gun pointed. Nothing. But then the giggle again. She fired. Pause, and there was giggling overhead, in the dull gleam of the inner lock. Her gun point searched for it. The giggling shifted. This way, that—

A whisper then. "I'd drink your personality now, Trigger! I was saving it up. But I can't. I'm too full. Perhaps the next time."

Trigger backed to the cruiser's entry lock, gun covering the area behind her, slipped in and dove into the pilot seat. The entry lock slammed shut. Engines already on . . . purr of power. She threw in the

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satellite's lock switches. The cruiser moved forward into the outer lock. Inner lock slid shut. Outer lock opened. She cut in full drive. In the same instant, it seemed, the satellite shrank into invisibility behind them, and she hit the subspace switch.

Some minutes later, Salgol addressed her tentatively from the seat beside her. "Would it distract you if I spoke to you now?"

"Huh?" Trigger looked around, saw the three of them gathered there, watching her solemnly. "No, it's all right to talk," she said. "We'll be running on automatics for a while."

Salgol hesitated. "Well, I—we noticed your face is quite pale."

"I suppose it might be." Trigger sighed. "There's some reason for it, Salgol."

"There is? We aren't safe?"

"Oh, we should be physically safe enough at the moment." Trigger shook her head. "But we may find we still have very big problems."

IX

"How much did the Service tell you after I got back?" Trigger asked.

"Not much at all," Telzey said. "Just that you were safe and sound but currently incommunicado. And that your little people were all right, too." They'd been having dinner together while Trigger related her experiences on the Sebaloun satellite.

"Of course, I had my own lines out," Telzey went on, "so I did pick up a few things. There's a flock of diplomats preparing for a trip to Marell to make official contact with its civilization, so somebody got to the group which was exploiting the Marells in time. Then I tapped a man who knew that group had a connection to the Sebaloun enterprises. When it was reported that Torai Sebaloun and two close associates had disappeared in space on her private cruiser and were presumed dead, I figured you could have had something to do with it.

"And, by the way, there were a couple of matters we were able to clean up at this end meanwhile. Some detective friends tracked down the outfit Wrann had hired to hunt for you. They were working without a license and had broken a number of unwritten rules on the job, and the big private agencies feel that sort of thing reflects on everyone. Once we'd identified them, all that was necessary was to pass the word along here and there."

"I hope they weren't treated *too* roughly," Trigger said.

Telzey shrugged. "I didn't ask. But I understand someone was extremely rough on the hotel security people who fingered you for Wrann and helped smuggle you out. I suppose that was regarded as the nth degree in unprofessional conduct. At any rate, you won't have problems in that area. No one seems much interested in Blethro's disappearance. He had a long, very bad record—it was almost bound to catch up with him eventually. But that still leaves a

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number of people who might connect you to the Sebaloun satellite and Torai Sebaloun."

Trigger said, "It turned out to be only Wrann and the yacht pilot and some of Wrann's underlings. They've had a case of group amnesia. Anyway, they're mostly in Rehabilitation."

Telzey settled back. "So, what were they keeping you incommunicado about?"

"Symbiote Control."

"Never heard of it."

"It's a special Service group," Trigger said. "Top-secret. They figured I might as well tell you since you'd be finding out anyway."

"I'd be trying to," Telzey admitted.

"Uh-huh. It seems there's a variety of immigrant creatures that keep out of sight in one way and another. They like the advantages of life in the Hub. Some pretend to be human. Mostly they're harmless, and some are considered useful. The Service likes to keep an eye on them, but sees no special reason to bother them otherwise.

"But then there are the ones that aren't harmless. Symbiote Control pumped me about everything that happened on the satellite. They already knew about the Torai type of entity and the Attuk type. The Perr Hasta type was completely new; but what I could tell them about it seemed to explain some rather mysterious occurrences they have on record."

"They *knew* about the first two?" Telzey said.

"Yes. They're taking care of that quietly, partly because there aren't enough of either around to be worth setting off a public panic. Attuk was a Gelver. It's their name for themselves. Gelvers get checked out individually. Most of them have sense enough not to use their shape-changing in ways they shouldn't, and they help locate others who might be doing it. They have an understanding with the Service. They can stay as long as they make no trouble."

"Where do they come from?"

"They don't know," said Trigger. "A Gelver ship got wrecked on a Hub world before humans ever reached this galactic area. The ones here now are remote descendants of the crew. They have no record of their home world and, of course, it could be almost anywhere. It's different with the Torai type of entity. They do know where that one came from and how it got here, and some other things about it. It's in the exploration records . . ."

Most of the surface of the entity's planet of origin, Trigger explained, was a watery swamp where no intelligent life had evolved. The host bodies available to it there had primitive nervous systems, and it was incapable of developing awareness which extended beyond that of its host. But a Hub expedition had spent some time on the planet and left it with numerous living speci-

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mens. The entities in the specimens began to transfer to human bodies. It was an instinctive process at that point; but with human brains, they acquired a human intelligence potential. They made use of it. Their existence wasn't suspected until decades later.

"What's been done about their world?" Telzey asked.

"It's posted. Satellite warnings in Translingue and a dozen other major Galactic languages, explicit about the danger of psychic invasion. Fortunately, the entity can't reproduce when it adopts a host outside its native ecology. There's no way to establish exactly how many were set at large in the Hub by that one expedition, but almost all of them seem to have been located by now."

"What do they do with them when they're located?"

"Not much one can do with them really, is there?" Trigger said. "They don't harm the host body. It lives and procreates and doesn't mutate out of the species. It uses its brain and may be performing a valuable function in society. To the sentient individual, of course, they're a destructive parasite. But that's how they've evolved. They get a choice between dying when the body they've currently occupied dies or going back to their world and its water creatures. I understand most of them decide to go back."

"So those three entities found one another," Telzey said, "and formed an evil little coven, grouped about the Torai Sebaloun figure . . ."

"For their mutual benefit," said Trigger. "You can see how Attuk and Perr could be useful to Torai. The Sebaloun family members who might have competed for control with her all seem to have died at convenient moments."

Telzey said after a pause, "There's still nothing to show what happened to Perr Hasta?"

"Nothing whatever. It was hardly three hours before I was back at the satellite in a Service ship with psi operators on board. But it was airless by then—open to space—the computer system off. And Perr was gone. It's a little odd, because the delivery lock was sealed, and there are no other facilities for a second spacecraft on the satellite. But perhaps she wouldn't need a spacecraft. After all, we don't know what she's really like. At any rate, I'm reasonably certain Perr Hasta is still around."

"And being around, she could look you up," Telzey said.

"Yes," said Trigger. "That's what makes it awkward for me. Of course, she's a capricious sort. She may have dropped the idea of absorbing my personality by now."

Telzey shook her head. "She doesn't seem to have been capricious about waiting for her chance to get at Torai and Attuk!"

"I know," Trigger said moodily. "I can't *count* on her forgetting about me—and that doesn't leave me much choice. I'm not going into hiding because of Perr, and I wouldn't want to

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have a Service operator keep me under indefinite mind-watch, even if they were willing to do it. Or even you. So I'll accept the Service offer to get those latent abilities of mine organized enough to turn me into some sort of functioning psi." She looked at Telzey. "They don't expect me to reach *your* level, but they think I should become easily good enough to handle Perr if she shows up. She didn't try to tackle Torai or Attuk until she had them at a disadvantage, so she must have limitations."

"They'll probably have you that far along in no time," Telzey said.

"Yes, I suppose so . . ."

Telzey smiled. "Cheer up, Trigger! It really isn't all that bad, being a functioning psi."

"Oh, I know!" Trigger returned the smile briefly. "I imagine it will be fun, in a way. And it certainly has its advantages. It's just that I never planned to be one. And now that I'm about to get started—well, it still seems rather strange to me! Shall we go?"

"Might as well." They gathered their purses and rose from the table. Telzey remarked, "You won't find it any stranger than a number of things you've already done."

"No?" said Trigger doubtfully.

"Definitely not. Take tangling with three inhuman monsters on a Rasolmen satellite, for example—" ■

[redacted]IN TIMES TO COME[redacted]

Two new writers make their first appearances with novelettes in next month's issue.

The cover story is "Common Denominator," by David Lewis. It deals with an aspect of war that's too easily overlooked: the warrior himself. Since the era of single combat began, back before David vs. Goliath, the lone warrior has been a fascinating and dramatic subject. In a future war, where a space fleet is battling the defensive forces of an alien planet, the lone warrior is again a key figure. This time his "steed" is a rocket-driven, extremely maneuverable, missile-firing ship. One ship, one man. But what goes on inside that single warrior's mind? What makes him an effective fighter? Lewis's story examines such a man, in a rare combination of action-adventure and character analysis. The cover is by Jack Gaughan.

Bob Buckley's novelette is called "The Star Hole." It deals with a curious twist of the mind of Homo Bureaucratis. To wit: once a certain amount of data on a subject is compiled, no contradictory data is accepted as valid. Now, everybody knows there's no life on the Moon. It's a dead planet. So if anything unusual happens, it can't be due to life processes. No, sir. Not at all.

We'll also have the conclusion of Gordon R. Dickson's "The Pritcher Mass," and a fact article about how close the engineers are getting to the servo-powered exoskeleton type of "jump suit" that Robert A. Heinlein wrote about in "Starship Troopers."

THE EDITOR

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Vincent diFate

THE HATED DREAMS

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Ever watch an ordinary-looking "solid citizen" drive his car along a highway like it's a P-38 tearing into the Luftwaffe? Well, when even that meager source of adventure is vanished, there will be other ways for bored people to set their pulses pounding.

JOHN STRAUSBAUGH

The boy crouched in the dense thicket, peering into the small clearing. It was night. A tiny fire, the size of a hand, glowed in the center of the clearing. In the fire was a blackened tin cup with water steaming in it. And hunched over the fire, staring morosely into the cup, was a short, paunchy, very hairy man. The black coiled hair on his naked chest and arms was almost as thick as the greasy serpentine locks which tumbled over his shoulders and writhed down his broad back, almost to the long red scar under his shoulder blades. His trousers were soiled and black, and they were cut away from his hirsute calves. He was half squatting, half sitting on a pair of knee-length leather boots that had seen better days. His face glowed like sunset in the firelight. Under his broad flat forehead, his thick eyebrows ran together, bridging the top of his nose, a sharp beak that had been broken and twisted thirty degrees to his left, so that he seemed to be sniffing at something over his shoulder. His lips were juicy and petulant, his chin round and a bit recessed. His eyes were large, and shiny black, and pensive.

The stocky man dipped one coarse finger into the cup, singeing some of the dense hair on his wrist. He pulled back his hand and swore toothsomely. He picked up a long straight razor with a pearl handle and ran his thumb along the edge with a look of intent distaste. He decided it was not sharp enough; pulling one boot from under his meaty haunches, he began to strop the blade across the cracked instep. After testing it again, he decided it was sharp. He reached into the fire and whipped out the cup, cursing and dropping it hastily to the ground, where fully half of the boiling water spilled, some of it splashing into the hissing fire. From a hip pocket he removed a crumpled red bandana. This he dipped into the cup, and then spread it out in his hands. He took a deep breath, and plastered the steaming cloth to his face. He uttered a muffled cry of pain and fell onto his back, kicking his right heel into the fire, whereupon he yelped and pulled it away, knocking some of the reflecting

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stones into the fire, almost killing it. Peeling the hot cloth away from his face, he leaped to his bare feet and looked into the thicket where the boy was hiding.

"Damn and double-damn yer eyes, whelp!" he yelled; and having yelled, he clapped his broad hand over his mouth. He continued in a hoarse semi-whisper: "It be hard enough to shave, without some big-eyed calf starin' at me from amidst them bushes."

His red-rimmed eyes stared right into the boy's, who started backward, conducting a cacophony of snappings and crackings in the dry underbrush.

"Would ye be quiet, ye damn bag o' bones, and come outtin there?" the hairy man whispered aggrievedly.

The little boy accommodated him with fearful haste and a minimum of noise, and stood on the edge of the clearing, trembling in his shorts and Buster Brown shoes. His hair was the color of hay, his skin fair, his limbs so thin that the big fellow's signet ring would have slipped from the boy's biceps. He wore, besides shorts and shoes, a short-sleeve shirt that had once been white, but now approximated the hue of grass. He had huge blue eyes, a button nose, and sweet lips. He stared at the hairy man through the fringe of his yellow bangs, while his scratched-up knobby knees banged together.

Before the boy's cowerings, the hairy man's bluster seemed to melt.

"Well, c'mon in, I won't eat ye," he growled, and paced back to his fire.

The boy watched him guardedly until he had settled himself on his dowdy buskins. Then the boy approached like a doe coming to water and sat cross-legged on the other side of the feeble fire.

The paunchy man broke up and fed to the fire some small twigs, and rearranged the hot stones. He looked up into the boy's wide blue eyes.

"What are ye starin' at, then?" he grumbled.

The boy licked his lips and spoke. His voice, too, was like a doe's, if does would speak to men.

"Please sir, is that water for tea?" he asked.

The hairy man frowned. He looked at the half-empty cup, and at the razor, and ran his hand over the blue-black stubble on his cheeks and chin. He coughed and spat over his left shoulder, into the night.

"Sure, I guess so," he said. He cocked an eyebrow. "Got ye any tea?"

The boy smiled wanly.

"Please sir, in my bag," he said.

"And a cup?" the man asked.

The boy nodded with a bit more enthusiasm.

"Sugar?" asked the man, cocking his black brow still higher.

"No sir," the boy said apologetically.

They stared at each other across the glowing fire.

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"Well go get 'em," the man urged gruffly.

The boy leaped up and ran to the bushes where he had been hiding. When he returned with the dark cloth sack over his shoulder, the hairy man had refilled the tin cup and placed it into the fire. The boy untied the knot that held the sack together, and produced a battered tin cup and a small paper bag. The man filled the boy's cup from his war-surplus canteen and placed it into the fire beside his own.

They sat back to watch.

"What be yer name?" the man asked.

"Christopher Robin," the boy said.

The man harumphed.

"I be Harry Trigg," he said after a pause.

The boy nodded dully. The man looked up and frowned.

"I said I be Harry Trigg," he repeated.

"Yes sir," Christopher Robin answered.

"Well damn it, boy, ain't ye never heard o' me?" the man cried. Then he slapped his hand over his mouth again.

"And keep it quiet," he growled.

"Please sir, I have never heard of you," Christopher Robin said meekly.

"What're they teachin' you yungin' nowadays?" Harry Trigg harumphed. "I suppose ye ain't never heard o' Bluebeard neither?"

"Oh yes sir, he's a pirate who killed six ladies," Christopher Robin told him.

"I know what he be," cried Harry. "I be Bluebeard!"

The boy's mouth made a little o.

"I'm sorry I didn't recognize you, Mr. Bluebeard," he said.

"That's all right," Bluebeard said. "I forgot I've shaved me beard. 'Tweren't really blue, anyway, but it gave me away once too often. Them People, they gives ye a nickername like 'at, it's dangerous. I mean, what if they was to call ye 'Little Skinny Blondie'? Then ye couldn't raid a merchant-ship nor slip into some little town for a quick one without everybody ye meet shoutin', 'Hoo, it be Little Skinny Blondie!' and they'd hang ye fer sure." He nodded pensively. "Hang ye like a hooked haddock."

"Was it a very beautiful beard, sir?" asked Christopher Robin, who had never raided a merchant or had a drink.

"Naw," said Bluebeard, who was visibly pleased. "It were like me hair, only shorter. I don't miss it, ye see, but I hate shavin'. Ye be lucky yer a boy."

Christopher Robin seriously considered that opinion while Bluebeard, with much scorching of hair and restraining of curses, retrieved the two cups. From the boy's paper bag he pinched two miserly rations of tea. The resulting brews tasted like hot tinny water. Bluebeard downed half of his in a scorching gulp, while the boy cupped his pale

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hands around the hot tin and blew on his drink.

"Ar, ye be lucky ye haven't growed up yet," Bluebeard said. "Nothin' but trouble, growin' up. Responsibilities, that's all it be, like makin' somethin' o' yerself, and defendin' yer manhood, and like 'at. Yep, many's a time I've wished I were a little boy again. Take my advice, and don't never grow up, if ye can steer around it."

Christopher Robin stared thoughtfully into his steaming cup, and asked:

"Please, Mr. Bluebeard, what is growing up?"

"Eh?"

The befuddled Bluebeard arched his thick eyebrow. Then he smacked himself, not on the mouth this time, but on the forehead.

"I plumb forgot!" he said. "I guess ye wouldn't be knowin' what growin' up is, would ye?"

"No sir," Christopher Robin said.

Bluebeard studied the boy's face.

"How old be ye, boy?" he asked.

Christopher Robin pulled a face and scratched his head.

"I don't really know, sir," he finally decided. "It seems I've been chased for a very long time, I'm sure."

Bluebeard grunted commiseratively.

"Ar, I'll bet it do," he said. "Ye must be from the third batch they sent out, back in '23. In my day, ye understand, they didn't involve no children nor women in this thing. 'Twere a man's game when I started out. That were in '87. I were in the first batch, seven hunnerd chased by two thousand. Bad odds, boy. Tain't many of us first batch left to run. 'Tweren't until five year ago they sent out kids. Damn craziness, what it be, usin' children as chased. Some crazy cruel People they must have now."

Bluebeard gazed thoughtfully into the hand-sized flames.

"Ever caught?" he asked abruptly.

Christopher Robin bowed his head.

"Only once, nearly," he mumbled.

"Hurt?" asked Bluebeard.

The little boy held out his right hand. In the slight fireglow, it shone like wax. There was no baby finger. The skin at the knuckle had been crudely sewn up with dark thread.

Bluebeard cleared his throat several times.

"Well, tain't nothin' to be ashamed of, Master Robin," he said lightly. "I be scarred in well-nigh a dozen places, as ye can see. Ye weren't caught an' hung, that be the important thing. Just keep 'em runnin', boy, runnin' and guessin', that's what counts . . ."

Christopher Robin stared into his tin cup. Bluebeard cleared his throat and stood up. He paced around the clearing, walking into and out of the surrounding gloom, muttering. He came back and sat down abruptly.

"Are ye hungry?" he asked.

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Christopher Robin shook his head.

"Would ye like more tea?"

"There isn't enough, I must save it," Christopher Robin said.

Bluebeard nodded and scratched his stubbly chin. He watched a moth loop and dive into the flame. It flew right into the center of the fire with a hiss, then it flopped onto its back in the white ashes and writhed in a paroxysm of either ecstasy or torment.

"Ar, it be a tough life," he said. "Sometimes I stop, and I ask meself how it got started. 'Tweren't always chased and chasers, ye know. Not in the old days, in Scripture."

"Excuse me, Mr. Bluebeard," said Christopher Robin humbly, "but didn't the Egyptians chase the Hebrews to the Red Sea?"

Bluebeard frowned and spat into the night.

"Ye be right, boy," he conceded. "Me Scriptures have got a bit mildewed, that's the truth.

"But it weren't the same, anyhow," he continued. "In the old days, it weren't *organized.* People chased other People 'coz they hated 'em, or they wanted somethin' they had, or they wanted everybody to be scared of 'em. 'Tweren't good, that's fer sure, but it were *real,* it were honest. Ye killed somebody outtin passion, ye see, or ideals, or what they called morals.

"But this thing, this chasin' and chased, this ain't real, tain't honest. People were gettin' bored, back around '87, 'coz nobody were fightin' nobody, nobody warrin' against nobody. Half the reason they began star-hoppin' in the first place was that they were hopin' to find green monsters or giants, somebody to hate. But all they found were decent, quiet folks, folks they couldn't hate or fight.

"That be how we got started, boy. People were bored, so they started this sport. It's all right, ye see, fer them to hate us. We be the bad folks, and they be the good folks. We run, they chase us. When they catch us, they shoot us and hang us in their homes. It's like fishin' or duck-huntin', and we be the fish and ducks. Ye understand?"

Christopher Robin nodded bleakly.

"Well, I'm glad ye do, 'coz I don't understand it at all," Bluebeard said, running his finger along the broken ridge of his nose. "Ar, I can understand them chasin' and hatin' me, 'coz I'm mean and ugly and they think I killed all them women. But where ye come in's what's puzzlin' me. How can they hate a little kid like you? There were two thousand sent out in yer batch, and all of 'em I hear were women and kids. That be some kind of sickness."

"Please Mr. Bluebeard," said Christopher Robin, "I think I understand."

Bluebeard cocked his eyebrow.

"The way you said it, made me think that the reason they started chasing you was that they were

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all bored," Christopher Robin said.

"Ar."

"Well sir, maybe after chasing you for so many years, they got bored with that too, so they started chasing little boys," Christopher Robin said.

Bluebeard looked surprised, and then some smoke got into his eyes. He coughed and spat.

"It be all right for them to chase an old pirate," he finally said, "but it be an evil worse than bein' bored that got them into chasin' children."

Christopher Robin said nothing. He was inclined to agree, and not only because little boys are easily swayed by pirates.

Bluebeard released a great chestful of breath.

"Be time to put out the fire," he said, "and get some rest."

"Yes sir," Christopher Robin said, and he began to follow Bluebeard's example of tossing dirt onto the flames. They both kneeled over the fire tossing handfuls of dirt, and the shadows fell in upon them, drawing them very close together. They were two tiny beings in a slightly larger clearing in a huge and dense forest, which in turn was a tiny corner of a large planet in an immeasurable universe . . .

The fire was out. Only a little smoke crawled up into the canopy of tall trees. In the dark, Bluebeard reached out one large hand and roughly patted Christopher Robin's slender shoulder.

"The worst thing People can do is not to let kids be kids," he said hoarsely.

"Yes sir," said Christopher Robin meekly.

The dead fire exploded in a starburst of multicolored sparks. Dirt, warm twigs, and shards of rock pelleted Bluebeard and the little boy, who were tossed onto their backs by the concussion.

"Damn!" Bluebeard shouted, rolling to his knees.

Christopher Robin sat up shakily.

"Run boy!" Bluebeard yelled.

A needle of intense scarlet light arced out of the forest and terminated on the ground three inches

The Analytical Laboratory / June 1972

PLACE	TITLE	AUTHOR	POINTS
1.	Hero	*Joe W. Haldeman*	2.17
2.	The Darkness to Come	*Robert B. Marcus, Jr.*	2.43
3.	A Transatlantic Tunnel, Hurrah! (Conclusion)	*Harry Harrison*	2.81
4.	Out, Wit!	*Howard L. Myers*	3.24
5.	Klysterman's Silent Violin	*Michael Rogers*	4.19

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from Bluebeard's left knee. That spot of earth exploded, and the sparks shot into the air, and Bluebeard fell again, this time with a shout of pain.

Christopher Robin ran to the old pirate. Bluebeard's knee had been fractured, and the gleaming twisted flesh and metal jutted out through the hole in his black trousers.

"Run," Bluebeard panted, and he shoved Christopher Robin so hard that the boy flew into the thicket where he had been hiding before. Bluebeard hobbled to his feet, and limped to a bush under which he had stashed his curved sword and peaked pirate's cap and clothing. He gathered the whole bundle into his expansive arms, and dived into the underbrush just as the bush exploded into fireworks.

From the spot where the shots had been fired, two figures came into the clearing. The first was a People, crashing out of the dense thicket. He was short and very fat, and middle-aged. His cowboy suit of sky-blue velour gleamed in the light of the blasted, burning bush. A huge ten-gallon hat crushed his rosy ears, and his pants were tucked sloppily into leather boots with intricate sequined scrollwork. His porcine face was flushed and dripping with perspiration, except where it was hidden behind a black velvet mask. His concave chest was heaving, and his gunbelt was slipping down around his knees.

Behind him, a tall, red-skinned animatron strolled calmly into the clearing. The river of his black hair was held under a snakeskin band, his eyes were black coals, his mouth thin and firm. In the crook of his buckskinned right arm he cradled a waspish rifle.

The fat little cowboy stamped his booted foot in gelatinous rage and whirled upon his towering companion.

"Dash it, Tonto," he cried in a squeaky voice, "you let them get away! That's the third bag you've missed this week. I have a good mind to have you dismantled when vacation is over."

Tonto's black eyes gazed placidly into his master's.

"Yes, Kemosabe," he said.

"If I didn't know better, I'd say you were letting them go on purpose," the little man continued.

"Yes, Kemosabe," Tonto intoned.

"Well, come along," the fat cowboy grumbled, and he disappeared, hiking his gunbelt and crashing into the dark woods.

The red-skinned animatron stood in the clearing. He looked at the disrupted fireplace and the smoldering bush. Then his inscrutable black eyes looked right into the harried eyes of Harry Bluebeard Trigg, and into the wide blue eyes of Christopher Robin, where each was hidden in the underbrush.

The red-skinned animatron wheeled and entered the woods, following silently in his master's crashing footsteps. ■

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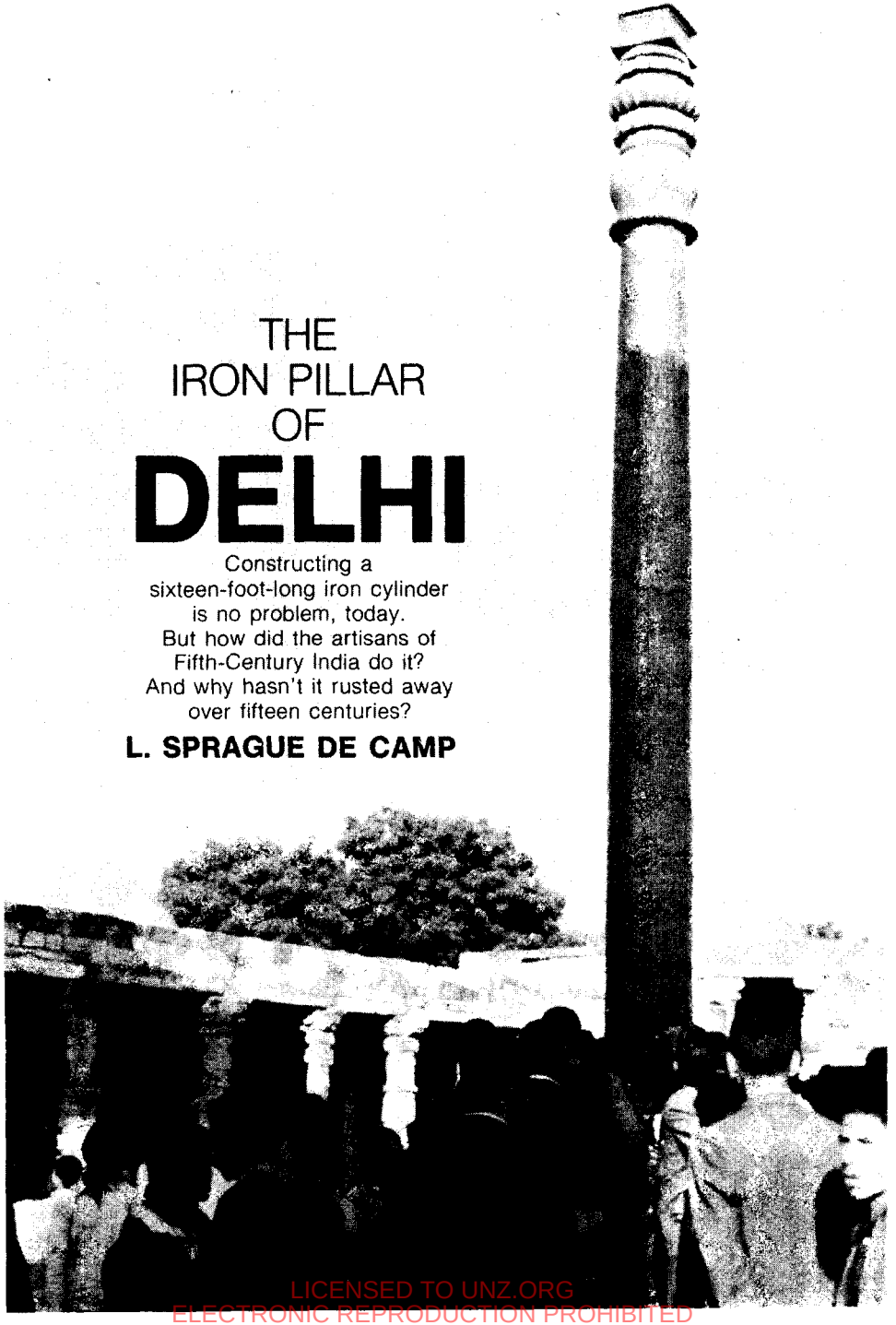
THE IRON PILLAR OF DELHI

Constructing a sixteen-foot-long iron cylinder is no problem, today. But how did the artisans of Fifth-Century India do it? And why hasn't it rusted away over fifteen centuries?

L. SPRAGUE DE CAMP



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Although rust has destroyed most relics of early iron metallurgy, one singular, enigmatic monument of this technological period does still exist. It offers puzzles to the historian of technology that, perhaps, will never be fully answered. This is the Iron Pillar of Delhi: 16 feet, 8 inches high and 16 inches in diameter. It is topped by an ornamental capital, which may once have borne a *garuda* or man-bird, the steed of the god Vishnu.

Ancient legend and modern archaeology agree that the smelting of iron was discovered in mountainous northeastern Turkey, an area that the ancients called Pontus. The discoverers were said to be a people called Chalybes by the Greeks. The discovery took place around 2,000 B.C., when copper had already been smelted for two thousand years and had been alloyed with tin to make bronze for nearly as long.

The reason that it took so long to progress from copper to iron is that smelting iron calls for a much higher temperature than that needed for copper. Once the trick was learned, however, knowledge of iron spread swiftly, since iron ore was much more common than that of copper.

As knowledge of iron spread, peoples who received it improved the process. The first iron was wrought iron, with a low carbon content but with a spongy texture from inclusions of slag. It was little harder than cold-worked bronze.

In the latter part of the first millennium B.C., smiths learned that hot iron could be made to absorb carbon. Then it became much harder and springier while keeping its structural strength. Opinions differ as to where this discovery of steel first took place. Some say Austria, some Sparta, and some India. Perhaps it was discovered independently in more than one of these places.

About the same time, the Chinese learned how to raise the carbon content still higher, to over 1.7 percent, and discovered cast iron. (The carbon content of steel runs approximately from .25 percent to 1.7 percent, but in practice most early steel was carbonized on the surface only—"case hardened"—leaving the interior still wrought iron.) Cast iron was even harder than steel. Although comparatively weak and brittle compared to steel, it had a low melting point, so that it could be formed into many useful shapes without the endless reheating, hammering, and filing required for low-carbon irons. In the period that Westerners provincially call the Middle Ages, the Chinese made whole pagodas of cast iron. Two or three of these structures still stood at last accounts.

The Indians attained great skill in ironmongery. The caste system, which divided the people into a multitude of specialized, hereditary, endogamous occupational groups, forbidden to marry or even to have social relations outside their own castes, made Indian culture extraordinarily conservative and resistant to

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change. Like most human usages, this system had some advantages and some disadvantages. It purchased order and stability at the cost of progress and adaptability.

Indian workmanship shows the qualities to be expected when the workman is born into his trade without hope of leaving it: high technical skill and finish with an almost complete lack of progress from age to age. Indian methods of warfare, like other Indian methods, changed only with glacial slowness. Hence, despite the efforts of many valiant Indian warriors, Indian history is a long and woeful tale of conquest by aggressive outsiders: Persians, Greeks, Scythians, Parthians, Huns, Turks, and Britons.

India, however, remained one of the few ancient lands that could make good iron and steel. Ingots of Indian steel were taken to Damascus, where Syrian smiths made them into the famous Damascene swords. In the early fifth century, one Indian ruler—probably the Gupta emperor Chandra Gupta II—erected the Iron Pillar, inscribed:

> *He, on whose arm fame was inscribed by the sword, when, in battle in the Vanga countries [Bengal], he kneaded (and turned) back with (his) breast the enemies who, uniting together, came against (him);—he, by whom having crossed in warfare the seven mouths of the (river) Sindu [Indus], the Vahlikâs were conquered;—he, by the breezes of whose prowess the great southern ocean is still perfumed;—he, the remnant of the great zeal of whose energy which utterly destroyed (his) enemies, like (the remnant of) the great glowing heat of a burnt-out fire in a great forest, even now leaves not the earth; though he, the king, as if wearied, has quitted this earth and gone to the other world, moving in bodily form to the land (of paradise) won by (the memory of his) fame; by him, the king—who attained sole supreme sovereignty in the world, acquired by his own arm and (enjoyed) for a very long time; (and), having the name of Chandra, carried a beauty of countenance like (the beauty of) the full moon; having in faith fixed his mind upon (the God) Vishnu, this lofty standard of the divine Vishnu was set upon a hill . . . (called) Vishnupâd.*[1]

Half a millennium later, the Pillar was moved to the village of Meheraulî, nine miles south of Delhi. There are several contradictory stories as to who moved it and whence.

In the 1190s, Qutb-ud-Dîn Aibak, the first Turkish sultan of Delhi, tore down the Hindu temple of Vishnu at Meheraulî (to him merely a lair of vile idolaters to be destroyed for the glory of Allah) and built a Muslim mosque in its place. As part of this mosque, he began the world's largest minaret, the Qutub Minar, but died during its construction by falling off

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his polo pony. Polo was an old sport among the Central Asian nomads, which the British later picked up in India. As finished by other hands, the Qutub Minar, standing near the Iron Pillar, reached a height of 233 feet, 8 inches, not counting a gazebo installed on top but later removed. A spiral stone stairway leads up the inside, and visitors may climb to the balcony on the first of the tower's five stages, 95 feet high.

I visited the Iron Pillar and the Qutub Minar with my guide in Delhi, Rajendra Singh. Mr. Singh, as is plain from his surname (meaning "lion"), was a Sikh. That is, he belonged to a sect of monotheistic, militant, anticaste Hinduism founded in the fifteenth century by the Panjâbi reformer Nanak. In the oriental adventure fiction of half a century ago, Sikhs were always tall and ferocious; but my Singh was a small, clerkly person despite his fierce whiskers and turban.

As it was Republic Day (January 25, 1967), Delhi was jammed with visitors, and it was hard to get close to any monument. Mr. Singh explained that Indians were not allowed to go up the Qutub Minar alone, because young persons disappointed in love had taken to climbing to the top of the first stage and jumping off. They would make an exception for me because, first, "Europeans" were not sensitive enough to commit suicide and, second, who cared if they did?

In the tower, people were jammed five abreast on the left side of the broad stairway, leaving the other side clear for those who had already been up to come down. (The Indians seem to have been the first to adopt a rule of the road: in their case, keeping to the left, which the British took over from them.) Then a crowd of young Indian mods, with pointed shoes, tight pants, and long hair, rushed in behind me. *They* wouldn't wait in line for anybody. They crowded up the right side of the stair, encountering those bound downwards on that side. At once everybody was packed in an immovable jam, unable to advance or retreat. It needed only for someone to lose his footing on the rounded surfaces of the worn stone steps, and there would be a mass of a hundred people rolling down the steps with me on the bottom. I need not belabor the lethality of panic in a jam like that. Anyway, loudly exclaiming: *"Maim jâtâ hûm! Maim jâtâ hûm!* [I'm going]" and using knees and elbows, I forced my way down and out. That is why I have no pictures of Delhi from the Qutub Minar.

To get back to the neighboring Iron Pillar, however: It is smooth and polished most of the way up.

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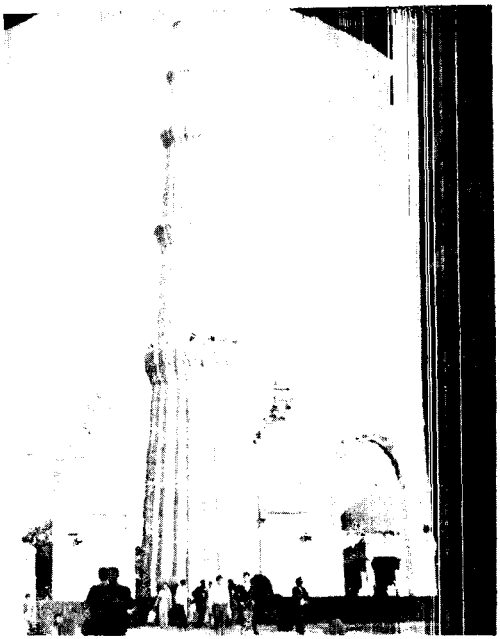

THE QUTUB MINAR

The cause of this polish is a local legend that, if you stand with your back to the Pillar and clasp your hands around it behind you, fame and fortune shall be yours. Hence it is constantly rubbed by the hands and coats of visitors trying out this Indian version of the Blarney Stone. If you fail to achieve the degree of fame and fortune that you think you deserve, blame the fact that you never performed this rite at the Iron Pillar. Another tradition says that the Pillar continues down "into the body of a serpent asleep in the deeps of the world."[2]

The Iron Pillar poses two problems. One: Why has it not rusted away in a millennium and a half? And two: How did the fifth-century Indian smiths ever make it in the first place?

The answer to the first is not too difficult. The Pillar is of wrought iron of a high grade, 99.72 percent pure. Such iron resists rust better than steel and cast iron, which contain more carbon. Furthermore, the climate of Delhi is too dry most of the year for rust to get a start. Actually, there is a little pitting by rust around the base—unless that be the effect of the venom of the "serpent asleep in the deeps of the world."

As to how the Pillar was made, that is a more difficult question. The best answer now known is only a guess—that the smiths welded together, one by one, a sixteen-foot stack of iron disks and smoothed them down by endless hammering and filing. Adherents of the traditional Indian culture—now slowly dissolving in the acid bath of this scientific-industrial age—did not let themselves become impatient over so long and laborious a task. After all, if one failed to finish it in this lifetime, one might get another try in one's next incarnation. ■

[1]Translation of the inscription, on a nearby plaque; courtesy of the Maharajkumar Virendrasingh. The words in parentheses are understood in the original Sanskrit; those in brackets are added for clarification.

[2]Lord Dunsany: *While the Sirens Slept* (London, 1944), p. 140.

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Now if you want to design a vehicle that can shuttle from your starship to a planet's surface, and you're really clever about it . . .

by DR. RICHARD J. ROSA

HOW TO DESIGN A FLYING SAUCER

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Michael Gilbert

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About ten years ago, I made an attempt to apply the quite new sciences of plasma physics and magnetohydrodynamics to the problems of vertical takeoff and short takeoff (V/STOL) aircraft. That is, aircraft that can take off and land in very confined areas, like a helicopter, yet once airborne, are also capable of high-speed horizontal flight, like a jet plane. Combining both these qualities in a single craft is exceedingly difficult to do; even today, attempts such as the Harrier jet fighter are only marginally successful.

My own attempts, using plasma physics and MHD rather than turbine engines and fixed or rotating wings, resulted in a rather odd-looking design. My "craft" was shaped more or less like a shallow lampshade. If it flew at all, it would doubtless be exceedingly maneuverable, would probably glow in the dark, and would quite possibly cause electrical disturbances of one sort or another when it got close to the ground.

In short, it would have all the characteristics commonly ascribed to flying saucers!

Being deeply involved in MHD and related research even now, I believe I can state without fear of contradiction that no such vehicle has been built either in the United States or elsewhere on this planet. At present there are good technical reasons why this is so, as will be seen in a moment. However, *if* there is in fact an advanced civilization from another star, and *if* these creatures have taken up interstellar travel, and *if* they have stumbled upon our own planet and decided to look us over, then I believe there are quite plausible technical reasons for supposing that the first visual evidence we would get of this would be the occasional sighting of a saucer-shaped, glow-in-the-dark, electrical-interference-causing flying machine.

Before going further, I think I should state my position in the Great Flying Saucer Debate. First of all, I accept the argument that the vastness of space, the enormous multiplicity of stars, and the biochemical nature of life make it quite probable that there exist other civilizations at least as advanced as ours. However, most of the so-called flying saucer sightings are probably not interstellar visitors, but something perfectly natural to our own planet. The mathematical probability of our being visited by beings from another star is extremely small—but not zero. Admittedly, there's nothing startling in these views; they are held by most of the scientific community today, I think.

My own hunch is that our first

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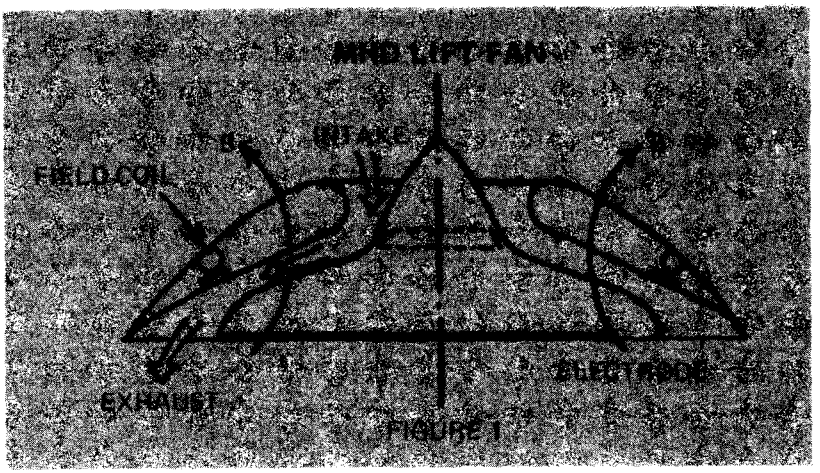

FIGURE 1

contact with an extraterrestrial civilization is more likely to be in the form of an interstellar electromagnetic signal than a visual sighting. But it is only a hunch. And just as the astronomers are busily developing theories as to just what such an interstellar radiogram would look like, it behooves us to try to deduce what form a visual sighting might take. It is in this spirit that I present the following argument.

A sketch in cross-section of the "MHD helicopter" design that I arrived at many years ago is shown in Figure 1.

The basic idea of this craft is to use electromagnetic forces to move air and provide lift and maneuvering thrust, rather than mechanical lift and thrust devices such as wings, rotors, propellers or turbines.

The heart of the MHD craft is a magnetic field coil, presumably superconducting since superconductors need no outside electrical power source once they're energized. An annular duct goes through the magnetic field that the coil produces, and electrode rings are placed on the inner and outer surfaces of the duct.

An electric arc is struck between the electrode rings. The interaction of the electrical current and magnetic field—called the j x B force in MHD jargon—causes the air in the annulus to swirl about. This whirling motion is converted into a radially outward and downward airflow by the aerodynamic shape of the duct. As the air is literally pushed out of the bottom of the duct, fresh air is drawn in at the top, and a net propulsive force results.

There is nothing startlingly novel about these principles of operation: what we have is the MHD equiva-

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lent of a centrifugal pump. (A hair drier is an example of a conventional centrifugal pump.) It is also similar to a type of plasma heating and propulsion device that has been studied in the laboratory for many years, and variously called the Magnetic Annular Arc (MAARC) or the Magnetoplasmadynamic (MPD) Arc Jet.

This MHD craft should be superior to present thrust-producing techniques such as helicopter rotors, propellers, and turbines because it has the potential for operating at high efficiency in a very wide range of flight regimes.

For vertical takeoff and hovering, it is desirable for a thrust-producing system to ingest a large amount of air and expel it at low velocity: hence the large diameter and rather low speed of the helicopter rotor. On the other hand, for high-speed horizontal flight, it is desirable to ingest a small amount of air and expel it at high velocity: hence the small diameter and high speed of the turbojet fan blades.

With solid materials such as rotor and fan blades, it is manifestly difficult to fashion a device that will do both jobs and still be light, reliable and efficient. Schemes that have been tried include an overpowered jet plane standing on its tail. This is relatively light, but not efficient, very noisy, and difficult to control. It doesn't make pilots too happy, and would hardly please the average airline passenger, or airport neighbor. Convertiplanes of one type or another have been tried, for example with rotor blades that fold in and wings that fold out. These are apt to be efficient aerodynamically but mechanically complex, heavy, and possibly not very reliable. There are other possibilities, but none have advanced much beyond the test and evaluation stage. The British-built Harrier is a jet fighter that ducts its engine exhaust downward for vertical takeoff, landing, and hovering, then once aloft proceeds like a normal jet aircraft. It is being evaluated in this country by the Marines. Its major shortcoming seems to be a lack of payload capability—so much of the plane's weight and volume are taken up by the VTOL system that there's little left for payload.

Electricity, on the other hand, is noted for its flexibility, adaptability, and ease of control. This is why it is so widely used in modern society. It is *not* so widely used in transportation, however, and there is an interesting reason why this is so.

At present, our prime movers—piston and turbine engines—deliver mechanical power in the form of a rotating shaft. Because of this, the most straightforward thing to do in order to produce propulsion is to mechanically couple this rotating shaft to a wheel, propeller or fan. Interestingly, when a high degree of flexibility and control is desired, engineers will sometimes go to the trouble of converting the shaft power to electricity via an electrical generator, and then back again to rotating shaft power

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through electrical motors. This is done in diesel-electric locomotives, some ships, and earth-moving machinery. It has not been done in aircraft primarily because existing electric motors and generators are too heavy. (This may change, however, as superconducting machinery is developed.)

It has not been done in automobiles because the gasoline piston engine with its associated transmission and drive-train is relatively cheap, reliable, and entirely adequate for public needs—with the recently important exception of its pollution emissions.

But look at what's happening now! There is tremendous pressure on the automobile industry to come up with a clean alternative to the gasoline engine. One response to this pressure has been a great increase in research on high-energy batteries. Unfortunately, it is proving rather difficult to construct a battery suitable for public use that is better than even the ancient lead-acid and nickel-cadmium batteries that have been around for decades. However, it is interesting and instructive to look at what is possible in principle if only we were a bit more clever. (This will get back to flying MHD craft, in two more paragraphs.)

Table 1 lists the energy per pound that various battery couples are theoretically capable of storing. Actual energy storage capacity for each type always falls somewhat below the theoretical limit, of course. The last column in Table 1 gives, for comparison, the energy available from hydrocarbon fuel after burning that fuel in a conventional engine of typical 30 percent efficiency. Note that some of the battery couples compare very well in stored energy, implying that vehicles powered by such batteries could have speed, range, and payload comparable in every way to our present hydrocarbon-fueled machines.

What would happen if such a power source were to become available: that is, a light and compact power source delivering electricity through a wire instead of mechanical energy through a shaft?

It is reasonable to expect that not only the design of automobiles but the design of *all* forms of transportation, including aircraft, would be affected. In the case of aircraft, where the objective is to impart relative motion to the surrounding air, it would be natural to ask, "Why convert the electricity first to mechanical energy in order to spin a rotor or fan if we can use the electricity directly to accelerate the surrounding air stream?" That is to say, if our aircraft power plant of the future delivers electrical rather than mechanical power, then it may well use MHD forces, because they are conceptually simpler and more direct than mechanical forces.

Of course, to the sorrow of all theoreticians, conceptual elegance does not necessarily lead to practical engi-

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neering. One must first ask some nitty-gritty numerical questions. In the case of the MHD aircraft, the two most fundamental questions are:

1. Will the magnetic coil be sufficiently light?

2. Will the power required to ionize or "break down" the air and hence render it electrically conducting be sufficiently low? (The air in the MHD duct must be electrically conducting in order to be moved by the j x B forces.)

Today, advances in the technology of superconducting magnets makes it possible to answer the first question with a confident "yes."

The second question is a bit more subtle, and no one—to my knowledge—has had the time or money required to answer it unequivocally one way or the other. My own brief look at the problem led me to believe that the situation was somewhat marginal, but not so much so that a modest amount of ingenuity might not turn the trick. One thing was clear: feasibility improves with altitude and velocity.

So now let us look at the situation from the point of view of our high-altitude, high-velocity and (hopefully) friendly visitors from Alpha Centauri as they cruise toward Earth in their magnificent great starship. Again one thing is clear. Since *they* are approaching *us* they manifestly have the edge on us with respect to ingenuity. (Or is it simply motivation? Never mind, the one breeds the other.)

Let us assume, however, that they have not discovered any really fundamental new laws of physics, any technique for time travel, space warping, antigravity, et cetera. Let us further assume that their transistors and testicles are as sensitive to radiation as our own. We may then deduce that their starship is nuclear-powered, heavily shielded, and huge—but probably contains no oil wells. We may confidently predict that its captain would no sooner land his ship on a planetary surface than an Earthly captain would consider docking the *Queen Elizabeth II* by running her up on the beach.

No. Special landing and reconnaissance vehicles would certainly be employed. But how fueled? Assuming that they do indeed labor under the constraints that have been placed upon their technology and upon their physiques, then neither nuclear power nor kerosene would be convenient. But if they are just a little more clever than we at constructing high-energy batteries and at causing air to ionize, then electrically-powered MHD vehicles recharged by the mother ship (or by the Earth's ionospheric electromagnetic energies?) would seem the obvious answer.

So it seems quite plausible that any visits we receive—or have received—from interstellar travelers may very well be made with inverted saucer-shaped vehicles that glow in the dark and cause radio interference.

You may detect one or two diffi-

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culties as yet unresolved. One is that even for the potentially best battery or fuel cell listed in Table 1, getting into orbit from a standing start on Earth would be a not-impossible but nevertheless highly difficult feat. Perhaps the answer here is some sort of midcourse refueling operation, either by another saucer, or energy beamed from the mother ship, or by somehow tapping the electromagnetic forces in the Earth's ionosphere and/or magnetosphere.

A second difficulty, if you believe that we are being visited now, is that while we can and do detect our own spacecraft, meteors, and so on with radar and optical telescopes, we have never detected the orbiting "big mother."

A lack of ingenuity on our part, perhaps? ■

Table 1

Energy Output per Pound of "Fuel" Consumed for Batteries and Fuel Cells Compared to Conventional Hydrocarbon-fueled Engines

		watt-hours per lb. fuel
Air Breathers[1]:	*Conventional Engines* (Efficiency ≃ 33%)	
	Jet fuel (kerosene)	2,000
	Hydrogen	5,000
	Batteries & Fuel Cells (Efficiency ≃ 67%)	
	Hydrogen	10,000
	Beryllium	4,750
	Aluminum	2,150
		watt-hours per lb. fuel + oxygen
Self-Contained:	*Conventional Engines* (Efficiency ≃ 33%)	
	Jet fuel and Oxygen	500
	Hydrogen and Oxygen	560
	Batteries & Fuel Cells (Efficiency ≃ 67%)	
	Hydrogen and Oxygen	1,120
	Beryllium and Oxygen	1,700
	Aluminum and Oxygen	1,140
	Lithium and Fluorine	1,670

1. *Note that for a vehicle to be rechargeable in space, it must not discard used fuel. This means that an air-breathing vehicle gets heavier during operation, which seems like a disadvantage. But perhaps the supply of oxygen brought back to the mother ship is welcomed.*

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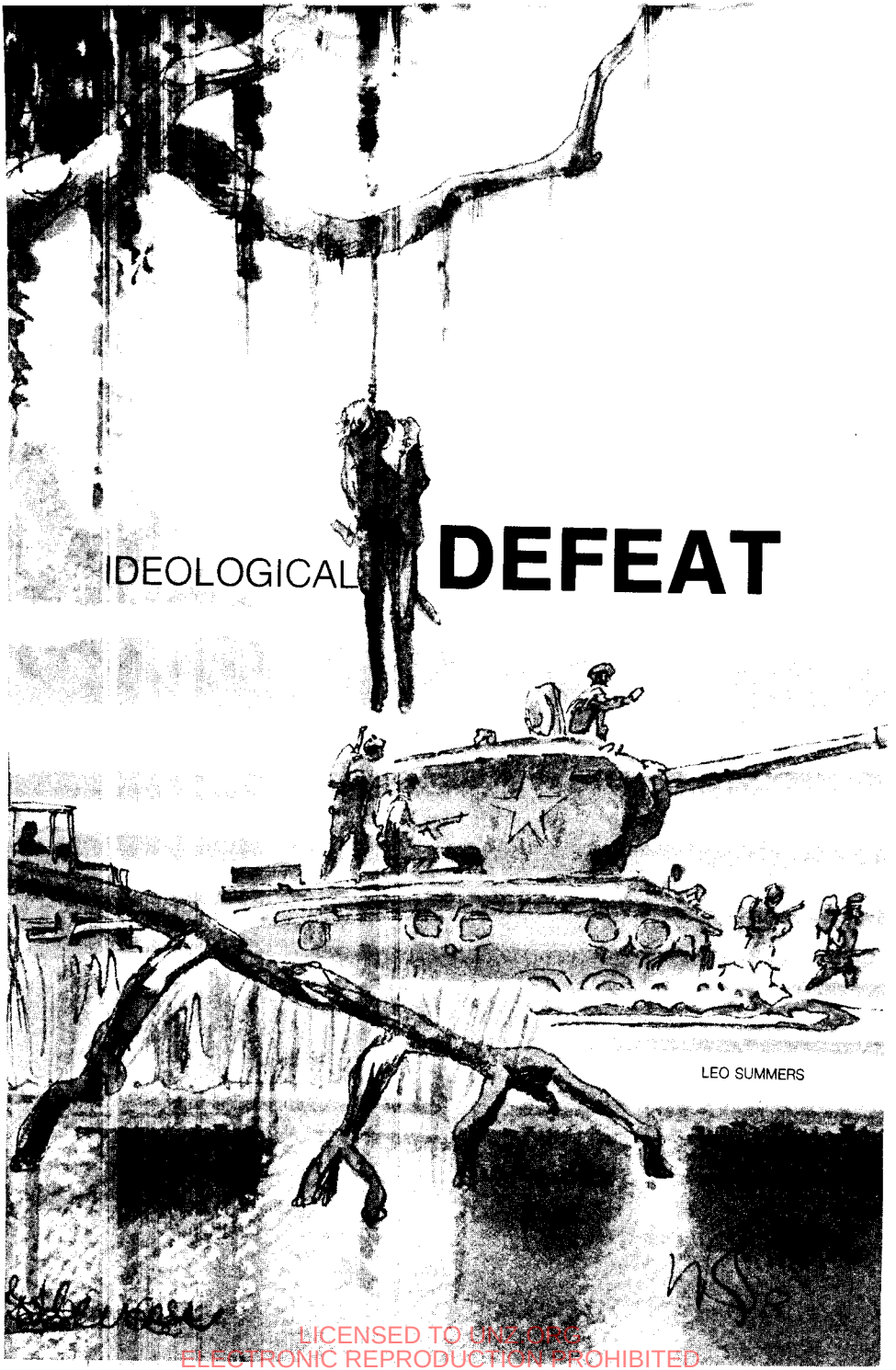

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There's a crucial difference between looking at a strange machine as magic, and trying to figure out how it works.

CHRISTOPHER ANVIL

Arakal, King of the Wesdem O'Cracy's, got up early on the day of the Soviet ambassador's visit, finished his exercise at the Post, studied the latest plot as brought up to date by Colputt's flasher, and then met with the Council.

Easing into the luxurious armchair at the head of the table, with the white-bearded Colputt to his left and broad trusty Slagiron to his right, Arakal once again got stuck in the side by the double-beaked, two-headed bird that adorned the hilt of his sword, the scabbard being guided in the wrong direction by the support for the left arm of the chair.

"This meeting," Arakal began, as he reached down and got the beak of the bird out of his flesh, "will now begin. In case anyone hasn't seen the plot this morning, the Kebeckers are as good as their word, and the Brunswickers are going along with them. The St. Lawrence is watched from the coast in, the armies are ready to move, and Kebeck Fortress is reinforced. I've sent word by flasher that if the Russ make a lodgment anywhere on the south bank of the river, we will help take them. If they try to get Kebeck Fortress, we will cross the river west of the fortress, and hit the Russ from behind."

There was a murmur of approval.

Arakal got the sword situated, and sat back in the chair.

To Colputt's left, Smith, Colputt's shrewd assistant, turned respectfully to Arakal. "By your leave—?"

"Yes, Smith?"

"We've got the night-flasher working."

There was a general stir. Across the table, young Beane, stuck handling the foreign diplomats, looked surprised.

"But I thought that was *impossible!*" He glanced at Arakal. "Beg pardon, sir."

Arakal nodded. "Go ahead. I've said my say."

Smith said, "Old Kotzebuth had us thinking it was impossible, but we decided to try it anyway. It works. Of course, the sun has set, and we have to spend some oil. But it works."

Slagiron's broad face creased in a

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grim smile. He said nothing, but Arakal had a good idea what he was thinking. The Russ prided themselves on their superior communications.

Further down the table, Casey, Slagiron's chief organizer, growled hopefully, "Will this work in bad weather?"

Smith shook his head. "Fog, snow, or rain blots out the flash."

"The Russ," said Casey, "can talk to each other almost *any* time."

"Well, they're using Old Stuff."

"That doesn't help us any. If we've got a bunch of them cut off, what do they do but yell for help, and here comes one of their damned iron birds, or a rescue force on wheels." He turned to Colputt. "We've got to do something about their long-talkers."

"Radios," nodded Colputt. "We've got a crew working on it, and I think we're finally getting a grip on the thing. Now, don't misunderstand me, I don't say we will *ever* be able to make long-talkers the equal of what the Russ have. But we should be able to do three things: First, we should be able to set up our own long-talkers to help out the flasher network. Second, we should be able to listen in on what the Russ say. Third, we should be able to turn out portable garblers to block their long-talkers. That is, they could still yell for reinforcements, but all that could be heard on the other end would be garble."

"That would all help."

Arakal said, "Anything would be an improvement. But why should we have to take second place? You're as smart as any of their men—probably smarter. Smith here is as shrewd as any they have to offer. Why must they be in front of us?"

Colputt shook his head sadly. "Old Stuff. They have more Old Stuff than we have. Captured radios have been turned over to me, and we've studied them, thinking to make our own, but to no use. We can't begin to work out the way they're made. The trouble is, the Old Soviets got in a fight with the Old O'Cracy's, and the Russ threw more stuff, did more damage, got the edge on the O'Cracy's. I don't say they won. But they did more damage. They have more Old Stuff left over. Long-talkers, iron birds, power sailers. We were knocked off our perch entirely. They had enough left over to use it still. Some of it, even, they may know how to make again. Not the long-talkers. But other things. They threw *us* back so far that I can look at the latest of our old books about radios, and see the words in front of me, and read them, and not know what they mean. That shows how far we were thrown back."

"Then," frowned Arakal, "this special crew you set up—"

"Ah," said Colputt, beaming, "that's different. We go at it now from the other end. We use the *oldest* of the old books—those we *can* understand. And we're working our way forward. The Russ, now, have

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their stocks of Old Stuff. Very useful. But, when it *runs out—"*

Slagiron looked at Colputt, smiling. "You aim to have a position you can *hold?"*

Colputt nodded, and his eyes glinted.

Arakal glanced at the clock on the wall. "This ambassador of theirs gets here when?"

Beane said, "Shortly before the sun is at full height, sir." He craned to look at the clock. "Another three hours, say."

"What is this one like?"

Beane shook his head. "The same as the rest."

"He is on safe conduct, of course?"

"Yes, sir. Worse luck. But he wouldn't come without it."

"There is always a chance of treachery—*either* way. Have all your precautions ready. Does this one talk English, or—"

Beane brightened a little. "There is *that* difference. This one does talk English. Of course, when he talks—"

"Let your translator take a place amongst the guards. Who knows? He might overhear something."

Beane nodded, smiling.

"Yes, sir. But I think they learned that lesson the last time."

Vassily Smirnov, Ambassador-General, glanced uneasily at Simeon Brusilov, Colony Force Commander, as the helicopter thundered around them.

"Just how safe," said Smirnov, "is a safe conduct from these savages?"

Brusilov said moodily, "Safe enough. As long as you don't look too long at any of their women, sleep with your ears under the covers, or drink anything except water or milk. Watch out for this Arakal. He's smart in streaks."

"What does that mean?"

"He's *ignorant in obvious* ways, but just overlook that. Where it counts, he's smarter than any of us."

Smirnov frowned. "An odd statement for our own commander to make."

"I say it because I *know.* And I did not enjoy gaining the knowledge."

"And just where *is* he smart?"

"Militarily."

"You flatter yourself. That is *not* what counts. Ideology is what counts in the end. That is why *I* am here."

"It didn't help us much in the last ambush."

"With your technological advantage, I'm surprised the natives dare to ambush your men."

Brusilov shook his head.

"Comrade, kindly get it through your skull that there are *two* technologies on this continent. One is shipped to us packaged and ready to use, but if it goes bad, who is going to fix it? The other is growing up steadily, and knitting the pieces of the continent together, and while it is in every way less impressive than ours, there is much more of it, and it is getting very tricky.

"For instance, there is this sun-signal system. It started in Arakal's sec-

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tor, and now he's linked up with the descendants of the Canadian survivors. Six months ago, we tried to cut Arakal's zone up the line of the Hudson, preparatory to biting off the whole of the old Northeast United States. The idea was, with that in our hands, we'd have a base suitable for protection of our colonies to the south. Arakal saw the plan in a flash. It was nothing but traps and ambushes, and dead stragglers and small parties yelling for help all the way from the time we hit the Forest.

"But we expected that. What we didn't expect was that an army would come boiling out of Quebec and the old seacoast Provinces, and get to us before we could finish the job. Not too long ago, Arakal would have had to send couriers. Now he uses the sun-signal system. We were lucky to get out of there with a whole skin."

"Certainly the savages' speed of motion is inconsiderable, compared with yours."

"We have the edge there, all right. It's just too bad so much of the road net is centered on the worst zones of lingering radioactivity."

"Is that their camp, there?"

Brusilov looked out, to see a tall steel tower. A gun thrust out and followed the helicopter, but didn't fire.

"That is one of their sun-signal towers. You see, these 'savages' have learned to work steel again."

"You should bomb them—*destroy* them!"

Brusilov looked at the ambassador. "Will *you* increase my shipments of fuel, and bombs, and planes? Will *you* get me more pilots? Do you know what this one trip is costing me in gas, and hence in future freedom of action?" He glanced out. "There is their camp. Try to remember that they are not as stupid as they may seem to you. Backward, yes. Stupid, no."

Arakal shook the hand of Smirnov, smiling gravely but noting the softness of the ambassador's grip. Such was not the grip of the Russ commander. The ambassador was like the rest of their ambassadors, but Brusilov, now, was a good man.

"The great Central Committee," Smirnov began impressively, "sends its greetings to you, despite the fact that your actions have not been of the best."

Brusilov muttered something and removed himself out of earshot, to the far end of the tent. Slagiron excused himself and went over to talk to Brusilov.

"This war," said Smirnov, with the air of an oracle, "costs much money, many lives. It must end."

Arakal smiled pleasantly.

"Then get off the continent."

"This land is ours," said Smirnov, spacing his words, and making his tone deep and impressive.

"Go home," said Arakal brusquely. "*Leave.*"

"Our colonists grow their wheat, plant their trees, speak their tongue, sing their songs. This is our land and

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belongs to us, just as the land of your tribe belongs to you, so long as we grant it to you."

Arakal gave a low growl of irritation, then looked up as Casey came over. Casey glanced around, apparently for Slagiron.

"Excuse me, Mr. Smirnov," Arakal said. "What is it, Casey? Your chief is over there with Commander Brusilov."

Casey nodded, looked thoughtfully at Smirnov, who was waiting impatiently for the interruption to cease, and then Casey spoke intently to Arakal, seeming somehow to send an additional message along with the spoken words: "Carlo is there."

Arakal's eyes momentarily shut, and he seemed to shiver. Then he drew a deep careful breath.

"I see," he said. "Well, I don't think it's worth bothering your chief with *that.* You can tell him later."

"Yes, sir." Casey smiled, bowed slightly, turned, and left.

Arakal looked at Smirnov blandly.

"Now, Mr. Ambassador, let me explain why you should do as I suggest. The Old O'Cracy's, which is to say the great clan to which we all here belong, once owned *all* the land, that which is good, that which is sick, and that upon which you have planted your colonies. The O'Cracy's once fought at your side long ago, and were mighty warriors, armed by the incomparable wizards who lived at that time. But they grew weary of war, and made fewer magical weapons than the Old Soviets, who in time struck them down. Why, or how this came about, I do not know. That is of the past. Both sides suffered, but that is over. Now, however, the land *was* ours, so it is not stealing when we take it back. It again will be ours, because we are growing stronger much faster than that part of your clan which is over here. This is why you should now get out."

Smirnov looked at Arakal and laughed. "There is not and never was a 'clan' of the O'Cracy's. Your 'knowledge' is a mixture of fables and errors. I suppose that word *O'Cracy* came originally from the word 'dem*ocracy,*' an inferior governmental system which your leaders made much of in the past, before we destroyed them. But never mind that. I will explain to you why you must not only end your rebellion, but must, and will, come to us that your tribe may be lifted by stages into ideological purity and civilized knowledge. And that you may know that my words are indisputable, I will tell you first just who and what I am."

Arakal leaned forward in his seat, as one braces himself who faces into a wind.

Smirnov said, "As you know, the rulers of all the Soviets are known as Party Members, and not just anyone can be a Party Member. Only the child of a Party Member can be a Party Member, except by direct action of the great Central Committee

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itself. Now, Mr. Arakal, you are sprung out of nothing, and have nothing behind you. But *I* am the child of a Party Member, who was the child of a Party Member, who was the child of a Party Member, who was the child of a Party Member, and indeed even *I* do not know for how many generations back this may go. You see the difference?"

Arakal's eyes narrowed, and he said nothing.

"You observe," said Smirnov, "that I speak your tongue. You cannot speak my tongue. But I speak yours with ease. It is nothing to me. This is because of my *education.*" He held up his right hand, turned the palm toward Arakal, and made a little thrusting motion of the hand toward Arakal. "Education is to be taught at such an age and in such a way that the knowledge becomes one with the person who is taught. He need make little effort to learn, Mr. Arakal, because he is naturally intelligent, and taught by skilled persons, whose job it is to teach, and to do *nothing else.* Such a thing you have not, but it is mine by right of birth. Those are *two* things we have that you do not have and cannot get without coming to us: One, the Party. Two, Education. But that is not all."

Arakal watched the glint in Smirnov's eyes, and listened to the wasp note in Smirnov's voice.

"Three," said Smirnov, "we have Technology. Let me point out to you, Mr. Arakal—and remember who it is that is pointing it out—that when your ancestors dared to raise their hand against us, the Central Committee gave the word: 'Strip from them all their power and all their technology, that they may never have power again. Because it is only from technology that power comes.' But, in the same order, the Central Committee said, 'See to it that *our* technology is stored, good and plenty, with grease and all the instructions to keep it running.' And so it was done. And our ancestors smashed yours to their knees, and then they kicked them off their knees onto their face, and they smashed your technology, and you can never rebuild it, because you have no Education. You are savages, nothing more, and never can be more, except you come to us to ask for it. Those are *three* reasons, and now there is the fourth, and most important of all."

Arakal pushed his chair back, and took pains to get the swordhead free of the arm of the chair.

"The Party, Education, Technology," said Smirnov, "and then the greatest—Ideology. And it is in this that *I* am an expert. I could have been anything, but I chose this, the most difficult of all—"

Arakal came to his feet.

"It has been interesting to listen to you, Mr. Ambassador."

"I am not through. Sit down."

Behind Arakal, someone drew his breath in sharply.

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Arakal didn't move, and there was a sudden hush.

Across the tent, Brusilov came hurrying, his expression harried. Slagiron was right beside him, alert and self-possessed.

Smirnov said irritably, "Sit down, sit down, Arakal."

Brusilov glanced in astonishment at Smirnov.

Smirnov raised his hand and thrust up one finger. "First, the Party." He thrust up another finger. "Second, Education." He thrust up a third finger. "Third, Technology." Each time he put up a finger, he gave his hand a little shake. He put up the fourth finger. "And fourth, *Ideology.*" He looked at the King of the O'Cracy's. "*Ideology,* Arakal."

Brusilov's jaw fell open.

From behind Arakal came a murmur.

Slagiron's lips tightened and his eyes glinted, but aside from that, there was no play of expression on his face.

Smirnov looked around.

"What's all this? Be seated, the lot of you!"

Brusilov glanced anxiously around.

Arakal could sense his men gathering behind him. Now Brusilov's pilots and guards came running, their hands on their holstered weapons.

Arakal took pains to keep his hands at his sides, though his left hand tilted the scabbard just enough so that he could get his sword out quickly.

The situation got through to Smirnov, who came angrily to his feet.

Brusilov stared at him.

"Mr. Ambassador, what have you—"

"Bah!" said Smirnov. "I am trying to teach this savage a minor lesson! *Very* minor! But it is all that is suited to his intelligence! The fools know nothing and so cannot think!"

Slagiron's eyes widened. He glanced at Arakal.

Arakal sensed the opportunity, sucked in his breath and gazed skyward for an instant, imploring guidance. He cleared his throat.

Behind him, there was an ugly murmur, and the clearly perceptible rattle of loosened swords.

Brusilov's men glanced around.

Behind them, more of the O'Cracy's stood ready, their eyes on Arakal, waiting the command.

From above, the words came to Arakal.

He raised his right hand, palm out, and spoke distinctly, and his translator spoke after him in the tongue of the Russ.

"Men of the Russ—go in peace. We have no fight with *you.*"

Brusilov exhaled, and glanced at Arakal with suddenly bright eyes. Behind Brusilov, his own men murmured, the sound one of surprise, and relief, and something more.

Arakal looked steadily back at Brusilov, and smiled, admiring the poise and insight of the Russ commander.

Slagiron grinned suddenly, and

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clapped Brusilov on the shoulder. He said something in his ear, and Brusilov gave his head a little shake, but smiled nevertheless.

Smirnov looked around, his eyes narrowed.

"What's this? Why are they—"

Brusilov abruptly grabbed Smirnov by the arm, and whirled him around.

Arakal shouted, "*You men!* Form an honor guard for the warriors of the Russ!"

All at once, there was a cheer.

Brusilov propelled Smirnov between the lines, and the other Russ hurried along behind. Slagiron and Arakal went to the front of the tent, and watched the Russ climb into their big iron birds.

As they took off, Arakal smiled and waved, and from inside the iron birds, some of the Russ smiled and waved back.

As the helicopter thundered around them, Smirnov spoke furiously.

"You dared to lay your hand on me! And I am a *Party Member of the Fourth Degree!*"

"Mr. Ambassador," said Brusilov shortly, "would you rather have had your head sliced off and rolled around on the floor of that tent?"

"You *touched* me!"

Brusilov opened his mouth and shut it. His gaze seemed to turn inward for an instant, then he took a hard look at Smirnov, his gaze cold and measuring.

Smirnov, staring back, put a hand on the holstered automatic at his side.

Brusilov tensed, then caught himself. For a long moment, he was motionless. Then he gave his head a little shake.

"No," he said. "No, it would be wrong." He looked at Smirnov again, then Brusilov went to a seat across the aisle and sat down, his face set and unresponsive.

Around them, the helicopter thundered, as it carried them above the tower of the O'Cracy's.

Arakal and Slagiron bent intently over the plot.

"So far," said Arakal, "there is no word from the Kebeckers of the Russ fleet entering the river. The Kebeckers say there is no sign of the Russ at all."

"Hm-m-m," said Slagiron. "I wonder if they could be going to try the Hudson again—with their main fleet this time."

"In that case, they would be in sight by now. Our lookout on Long Island has seen nothing, and the same word has come in from our boat off the Hook."

"Peculiar. Still, there is a delay in getting word to us."

"True. We get the word quickly from Kebeck Fortress over the flasher, but a runner crosses from Long Island by boat."

Smith cleared his throat apologetically.

"Beg pardon, sir. Just last week,

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while you were . . . ah . . . working with Carlo, we got the flasher set up across Long Island Sound."

"What? There's a tower there?"

"No, sir, that would be too risky, but the sea is flat, and we can do without towers over that distance. There's still a delay in reports from off the Hook. But from the Sound, in good weather, we get them fast. There was no long delay on this report."

"Good. But now, you see," he said, turning to Slagiron, "that leaves us up in the air. They've sent this new ambassador. This Central Committee is as regular as clockwork. They never send a new ambassador without sending reinforcements, and they never send reinforcements without sending their fleet. Now, we've had the ambassador. Where's the fleet? We want to take that blow on our shield, not on our head."

The door opened briefly, and they heard a rumbling thud, like distant thunder. Arakal looked around, to see Colputt, smiling faintly, hang his coat on a peg and walk over.

"Now they're bombing the conference site," said Colputt.

Arakal smiled. "The more they drop there, the fewer they can dump on our heads. And they bring those things a long distance."

Slagiron shook his head. "This ambassador is their worst yet. If a thing is disastrous, he does it at once. No doubt now his pride has to be soothed."

Colputt added, "*And* their fleet is sighted. We just received word."

"What? *Where?*"

"Penobscot Bay."

Arakal looked at the contoured plot, and the wide deep indentations in the Maine coast.

Colputt went on, "They are landing troops at Bangor. Before the landing, their planes knocked out the flasher tower at Skowhegan."

Slagiron looked at the plot thoughtfully, and glanced at Arakal.

Arakal turned to Smith. "Send word to the Kebeckers. Describe this landing. And tell them *Carlo is ready.*"

Slagiron said, "Will they come?"

"Why not?" said Arakal, looking at the plot, where the markers were already being set down. "Could we ask for more?"

"On the map," said Slagiron, "this will look bad. From Bangor it is only, . . . say . . . a hundred and eighty miles to Kebeck Fortress, across country. The Russ can cut straight for the river, and split us off from the Kebeckers—on the map."

Arakal smiled. "A hundred and eighty miles of *what?* And when the Russ get there, they're on the wrong bank of the river. Meanwhile, their fleet is stuck at Bangor, or coming around by the Gulf, or else it gets there without the troops. Try the Kebeckers, and see what they say."

Brusilov returned the major's salute.

"Sir," said the major, glancing around at the rugged peaks, and

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swatting at mosquitoes, "that map is either wrong, or we're turned around. There *is* no road. And the sniping is getting worse."

Smirnov spoke up sharply.

"You are a soldier, are you not? You expect to fight in a war, do you not?"

Brusilov spoke coolly, "We aren't lost, Major. Simply assume that the map is right, and cast around for the road. Don't worry. It will be broken up, but it's there."

The major said stubbornly, "The men say this is going to be the Hudson all over again. They don't like it. They are growing hard to manage."

Brusilov smiled soberly and shook his head. "Have them look at this mess of lakes, ponds, and swamps. Did we have anything like this on the march up the Hudson? No." He waved a hand at the cloud of small black flies that, interspersed with occasional mosquitoes, settled on him as soon as he devoted himself to anything else. "So," he said, "it is not the Hudson all over again. This is quite different. Console yourself, my friend. We have variety, at least."

The major looked sullen, but saluted. Then he trudged off up one of the interminable hills over which the road through the heavy forest climbed and plunged.

Brusilov glanced at Smirnov.

"Isn't this far enough? Speaking as a merely military man, devoid of ideological finesse, *I* think this is far enough."

"We must press on," said Smirnov. "Until we are sure the natives are fully committed."

Brusilov shook his head.

"Comrade, in a general way, this plan is not bad; but there are details, and it is the details that will ruin us. Arakal will not react as you expect. You would draw him here by a threat, fall back before him, lure him to the coast, embark, and strike elsewhere. He will not be drawn, however. He *will not take the bait.*"

Smirnov smiled in a superior way.

"I know the aboriginal mind. This native leader is without training. He is brave, and has personal presence, but no sense of grand strategy. He is already beaten in the realm of ideas."

"No, he is not." Brusilov frowned and waved away a cloud of the tiny flies. "That is the trouble. He is a master of conflict, in the realm of ideas as elsewhere."

"Look here," said Smirnov, suddenly earnest. "The method by which the fellow's ancestors were beaten was quite simple. We took a little advantage, repeatedly, until we had a big advantage, and at each point the change was too small to stimulate them to action. The records are somewhat confused as to details, but obviously when we had *enough* advantage, *then* we struck. Now, this conflict here is the same thing, except that there is no longer another ideologically able side to oppose our movements. We have now the fruit of the last war, an ideological and technological advantage they

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can never overcome. Specifically, our speed of movement is faster than theirs. That is enough. It is unbeatable. It is the advantage that will give us everything else."

"I am not sure of it."

Smirnov's earnestness gave out, and he spoke irritably. "You *were* defeated. Your plan was good, but you lacked subtlety. You proceeded straight ahead. 'Cut them up the line of the Hudson!' A good idea. But you were too direct. You should have drawn them elsewhere first."

Brusilov shook his head. "It was their solar flasher that wrecked my plan. They are not aborigines! Aborigines do not *know* of technology. Arakal's people remember what they could do; they know it is possible. They keep thinking, trying to find the way again. It is *that* that distinguishes them from aborigines."

"Well, their solar flasher is what will destroy them now, by decoying their main forces to this place. And it is *our* speed of movement that will then deliver the deciding blow."

"I hope so," said Brusilov. "But where is Arakal?"

Arakal, perspiring in the humid foggy dawn, looked through the precious long-seeing glasses, and noted the lone guard pacing atop the breastworks, on the far side of the canal.

Beside Arakal, Slagiron murmured, "They seem asleep."

Arakal nodded. "They would be flattered to know how many are watching them. They have never had so many of us at once before—though we have traded with them secretly so long they no longer dread us."

Slagiron shut his glass with a snap, and grinned.

"Now, we will find out if all those crisscrossing rivers shown on our maps are obstacles or not. Only let us not be invisibly burned to bits by all the slagged ruins in the vicinity, and we will even see if your plan can work. . . War without blood. . . I doubt it, but it is worth a try."

Arakal glanced around and saluted the Kebecker leader, who beamed and raised his hand. Then Arakal turned to signal to his own cavalry chief.

The cavalryman grinned and took off his hat in a sweeping gesture, then turned and beckoned to the dense woods behind him.

A long line of mounted men in gray emerged from the forest and, at a walk, started down toward the canal. Behind them came teams of oxen dragging long heavy logs, and behind *them* came small groups of infantry, some stripped to their waists, all quiet, and most looking cheerful, as if on some kind of outing.

Atop the breastworks, the sentry halted, turned, and started back. Hypnotized by his routine, he paced methodically, halted again, turned, started back, and suddenly froze. He stared up and down the line of smiling horsemen leisurely approaching

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the canal, stared at the oxen pulling the logs, looked hard at the infantrymen gaily jumping into the water, and before he could recover, someone called out in his own tongue, making him uncertain for an instant who this army belonged to.

Meanwhile, the infantry swam the canal. In the water, the engineers were taking the ends of the logs as they were rolled down, and pulling them out into the water. The cavalry were swimming their horses across, and soon, if all went well, the guns and catapults could go across on the bridges.

Atop the breastworks, the troops were now banging the stupefied guard on the back, and he himself was starting to grin and laugh, and now shook his head and turned to shout to someone, who climbed up, looked around in amazement, stared in both directions up and down the canal, where the gray uniforms were crossing over, and finally shrugged and spread his hands.

Slagiron murmured his satisfaction, and turned to Arakal.

"You were right. No shots, no advance bombardment, *no attack,* just an *advance."*

"As long as it lasts," said Arakal. "When we hit the garrison at Salisbury, it may be different."

"If we get to Salisbury," said Slagiron, grinning, "we've got the whole colony. They'll have one sweet time getting us out once we get to Salisbury."

"Remember," Arakal warned, "they must be treated like O'Cracy's. They are good hard workers and decent people, and if we treat them right, they will *become* O'Cracy's."

Slagiron nodded. "I have pounded it into the troops. *They* know. I even almost believe it myself now."

Brusilov, half eaten up by bugs, was in a murderous frame of mind. He had three tanks in a bog, half-a-dozen out for repairs, the sniping was continuous and getting worse, and worst of all, the men had no heart for the fight. Smirnov, however, was delighted.

"I would say we are now drawing in the first of Arakal's troops. Would you agree?"

"Hard to say," growled Brusilov.

"All this uproar could not be caused by locals."

"You can't be—" Brusilov frowned at a courier running up the slippery ruts. "What's this?"

The courier, out of breath, saluted and held out a slip of paper.

Brusilov unfolded it, read quickly, and stared at Smirnov.

"What is it?" demanded Smirnov.

Brusilov handed it to him.

Smirnov took it, read it, stiffened, looked up blankly, read it again and, absently fanning at the bugs, stared blankly at the towering hills.

"Impossible. Delaware in the hands of New Brunswick troops. The Army of Quebec on the line of the Nanticoke River. Arakal swinging around to the east of Salisbury. *The whole Maryland-Delaware Colony is*

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lost. How can it have happened?"

Brusilov said grimly, "I've tried to explain to you not to underestimate Arakal. Well, *now* what do we do?"

Smirnov broke out in a fine perspiration.

"It is *impossible!*" He glanced at Brusilov. "You are the military commander! What is your opinion? This is *your* specialty!"

"Oh, of course. But you are the one with the letter of authority from the Central Committee. Also, *you* have the ideology."

"What would you *advise?*"

"Pull out. Maybe we can still save Carteret, Beaufort, and Florida Colony. We aren't doing any good here."

Smirnov stared into the distance. Suddenly he drew a deep breath.

"It is *impossible* for an unlettered fool who thinks the O'Cracy's fought the Russ with magic wands to win this contest! He has won a chance victory, but he has lost the war!"

Brusilov shook his head wearily. "How do you reason *that?*"

"He has shifted the full strength of this part of the continent to the south, against our colonies. *We* will strike to the north, take Quebec Fortress, open the line of the St. Lawrence, and later strike simultaneously up and down the Hudson to cut off all New England. He has won the Maryland-Delaware Peninsula; but can he hold it, can he pacify it? We will at once warn the other colonies of his atrocities. They must stand in their own defense at once. Meanwhile, *we* will get this burr out of our hide, get this river fortress into our *own* hands!"

"You want the troops back on the ships?"

"*No!* Every last soldier must come *here!* Then send the ships around to come down the St. Lawrence and ferry us across. We will now cut loose from them entirely and march overland!"

Brusilov considered it thoughtfully, and shook his head. "No. Look—"

But Smirnov made an axe-like gesture of the hand, from the shoulder straight out.

"Cut the continent, from the Atlantic to the river line. Wheel south and east, smash all resistance in our path. Cut Arakal loose from his base. Swiftness, speed, decision—and the ignorant tribesman is whipped. In this first fight we will turn our soft soldiers into hardened troops, *veterans.* Then we will see!"

Brusilov stood thinking, his right hand on the flap of his holster. Finally he shrugged, and turned to give the necessary orders.

Arakal reread the message that had come in flashes of light down the line of towers from New England. He looked at Slagiron.

"The Russ are heading for Kebeck Fortress, *overland.*" He handed the message to the leader of the Kebeckers, who had just joined them, and whose translator, standing between his chief and Arakal, trans-

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lated Arakal's comment, then bent over the message and read it in a low voice.

The Kebecker chief glanced at the plot, where the red emblems climbing the green and brown slopes and surrounded by a multitude of small blue markers were now being moved further forward. Then he turned with a slight smile, to give the message back to Arakal.

"*Ça sera un peu difficile pour les Russes,*" the Kebecker said, speaking slowly and distinctly, and holding one hand up to silence his translator.

Arakal winced and glanced at the ceiling. It came to him that the Kebecker had somehow learned of the hundreds of hours he, Arakal, had put into a study of the Kebeck tongue, while the depth of winter made campaigning impractical. Arakal had been prepared to forget all about this and rely on the translators, but someone's sense of humor had given away the secret. All winter Slagiron and the others had joked slyly at Arakal's laborious progress, while Arakal, chafing at the depths of linguistic incapacity revealed to him with each day's effort, nevertheless had refused to give up. Determinedly good-natured, he replied, "While you pass the winter in perfumed idleness, *I* am laying the groundwork for the future. If we are going to clout the Russ in the springtime, one of us, at least, ought to understand the Kebeckers' chief. He has shrewd ideas, but the translators are no military geniuses, and now and then they miss the point. And it is up to us to solve it somehow. You know as well as I do that their chief can't speak a word of English—not that he hasn't at least tried."

Slagiron shook his head. "He *did* memorize that greeting when we got Carlo across the border and went up there for a talk."

Arakal nodded, remembering the incident soberly. "That's what I mean."

Colputt turned to Smith. "Did we ever figure out what he said?"

Smith looked helpless. "Don't ask me. Did you see the looks on the faces of the translators?"

"In my opinion, it wasn't anything," said Casey. "Neither their talk nor our talk. Just *noise.* It *sounded* like something, but nobody could make it out."

Arakal shook his head. "Our translators explained it to me later. He had *our* words and *his* way of speaking. That's why nobody could follow it. But the translators finally figured it out. What he said was just what we thought he *must* be saying, from his expression. He greeted us, praised Carlo, and looked forward to our future cooperation."

"Hm-m-m," said Slagiron slyly, "but will *you* be able to do as well come next spring?"

Everyone had laughed at that as the snow whipped around the winter camp, and the cold set its teeth into the logs of the buildings.

And now, after the victory over the Russ, Arakal stared at the ceiling,

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and the Kebecker chief smiled and waited.

Slowly, in Arakal's mind, the meaning evolved: "That will be . . . a little difficult . . . for the Russ."

Arakal thought it through again. Unquestionably, that was what it meant. Now, he avoided glancing at the grinning Slagiron, and trusted to the labors of his Kebeck-born translator. It was a somewhat ambitious reply he had in mind, but he thought he could get it out. He drew a deep breath, then spoke slowly and carefully:

"Carlo et nous, nous ferons beaucoup des difficultés pour les Russes."

Across the room, Arakal's translator winced, but the Kebecker translator looked agreeably surprised.

Arakal laboriously went over it again in his head now that it was out. Surely what he had just said had come out as it was supposed to: "Carlo and we, we will make plenty of difficulty for the Russ."

The Kebecker chief glanced at the ceiling for only a moment, then smiled and nodded.

"Ah, oui. Carlo et nous." He bent over the Plot, and speaking clearly and slowly his meaning came across almost as plainly as if he spoke English.

"Carlo—where does he go in these hills? Will the Russ not find him?"

"No," said Arakal carefully, now suspecting that he had already made one mistake in his first answer. "Carlo is back of those hills. The Russ will not find him. But we will show them what he can do."

Brusilov, though by no means charmed with this plan, was still uncertain whether it might not, after all, turn out to be workable.

Smirnov, now that he had set his mind on a definite idea, proved to have at least one outstanding quality—total ruthlessness.

"Hang them!" he commanded when suspected snipers were brought in. "Leave their bodies dangling as a warning to others! Enough delay for these dogs! Forward! We must go forward!"

Under the lash of his tongue, with the reinforcements pouring in from the ships, the army had begun to move again. Through swamps, streams, rivers, up and down mountains, through dense forest, over a track of a road that had long since ceased to be useful, where the pines and oaks and hemlocks grew ten inches through and had to be felled to make way for the tanks and supply trucks. Through endless snipers, who used guns, and longbows that were worse than guns—whose arrows could pin a man to a tree to wait in shock and despair for the next arrow that would finish him.

But they moved.

And with progress and a definite goal, the troops began to look up. Soon the endless hills would have to grow smaller. Arakal's men, on foot and on horseback, could not hope to return from the South in time.

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Now Smirnov's troops were in the swing of the work, their superior weapons and numbers making themselves felt. Sensing victory, they became tougher, would not be stopped, would not be overawed or intimidated. The crafty Arakal was at long last outmaneuvered, and they were the ones who would beat him for good.

Before them, the snipers melted away, to content themselves with picking off stragglers that had fallen behind.

Smirnov grimly urged more speed, and now there was nothing but forest and hills and water and bugs to contend with.

They camped one night in a place where two small rivers came together, to flow away in a larger river to the north. They had lost many of the tanks and quite a number of the trucks, but their spirits were high despite their weariness.

Brusilov listened to Smirnov's prediction.

"My friend," said Smirnov, "this march will go down in world history as a major military stroke."

"If," said Brusilov soberly, "it were not that we will rejoin the ships soon, we would be in serious trouble. Our gas, food, and even ammunition is getting low."

"But we *will* rejoin the ships."

"We could have accomplished the same trip by boarding the ships and being carried there without losses," said Brusilov.

"True, but also without victory. We are conquerors now. And the men know it."

"There is truth in what you say. And yet—"

"And yet?"

"It is hard for me to believe that Arakal is beaten."

Smirnov laughed.

"You have been beaten by him, and so you think he can beat anyone. I have seen deeper than he from the beginning, and beaten him ideologically."

"No. He outmaneuvered you at the meeting. He turned the men against you."

"If so, where is the result now? The men are blooded, tough and determined. The effect of Arakal's cleverness is lost. He has been *outthought.*"

But in the morning, when they tried to cross the river, murderous sheets of fire greeted them.

Brusilov, looking down around the edge of a small boulder, and seeing the burning vehicles, the men spread-eagled in the water and other men who rushed into the stream while still others straggled back from it—Brusilov, seeing this, wormed backwards, dropped down a short slanting bank and ran doubled over toward the center of the camp. The heavy firing, he noticed, was all from in front, none from the rear or flanks.

Quickly, he gave the orders to pull back, then try probing toward the east. They *had* to get to the river, but

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they could never make it going straight ahead.

Meanwhile, the sniping that had let up a little while ago was worse now than it had ever been. The tanks, in this country, were worthless alone. They could sometimes ride the trees down, but only to make a tangled jumble that was worse than what they had had to contend with in the beginning. A way had to be cleared for them, but who could fell trees in this blizzard of bullets and arrows?

Toward ten o'clock, Brusilov, with the speechless Smirnov in tow, broke through toward the east, then swung northward again toward the river. But in the unending fighting, in the dense roadless forest, the tanks and trucks were an unbearable encumbrance.

Smirnov, finding himself alive, recovered his voice.

"Let us send the armor and transport back the way they came. There, the old road is cleared, and they can escape."

"Where to?" demanded Brusilov. "Back to Bangor?"

"Why not?"

"Do you know what will happen to the men? Remember, you had the suspected snipers hanged and left as a warning. What will the people do now?"

"Our men can overawe them with their weapons."

Brusilov laughed, and gave orders to fire all the remaining ammunition of the tanks in the direction of the enemy and then smash the engines. The trucks he had unloaded of whatever was useful, and rolled them into the river.

"It is a waste!" cried Smirnov.

"We need every man we can get," said Brusilov.

Desperately, they fought their way toward the north, and suddenly and unexplainably the opposition gave way.

A lone cavalry captain under a white flag made his way to Brusilov and Smirnov, to invite them to a conference.

"Do they wish to surrender?" wondered Smirnov aloud.

Brusilov looked at Smirnov and shook his head moodily—and accepted the invitation. He gave orders that the march was to continue, conferred with a few trusted officers and went with Smirnov to the conference.

Arakal seated himself across the little table from Smirnov, smiled at Brusilov's look of amazement and turned briefly to Slagiron.

"The pursuit, of course, is being continued?"

"Yes, sir," said Slagiron respectfully.

Arakal faced Smirnov.

"We regret that we have to use harsh measures. But the men are in an ugly mood. They have seen the corpses dangling from the trees. And some of these corpses were badly disfigured. You understand that we must be severe or the men will take

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matters into their own hands."

Brusilov was nodding moodily. Smirnov said nothing.

"We know, of course," said Arakal, "where the order came from." He looked at Smirnov, and waited.

Smirnov, frowning, said, "So, the message was a hoax?"

"What message?"

"The message from Salisbury."

"A hoax?" said Arakal. "Ah, you think we *decoyed* you here?"

"Yes."

Arakal shook his head. He turned to an officer standing beside a wooden chest. "Show the Ambassador General the flag from Salisbury."

The officer bent, opened the chest, took out a large flag, and handed it to Smirnov.

Smirnov held it, passed the cloth between his fingers, and looked up at Arakal. He tried to speak, swallowed, and tried again.

"So, it is true. You have taken Delaware Colony."

Arakal bowed his head.

"By the Grace of God. We also have Beaufort and Florida Colonies. Carteret is still holding out. We will go down later to Carteret and return the favor the Army of the South is doing for us here."

Brusilov jerked as if a hot wire had touched him.

Smirnov blinked, but it took him a moment longer to respond. "The Army of the South? *Kilburne's Guerrillas?*"

Arakal smiled. "General Kilburne commands the Army of the South."

"But . . . how—?"

Suddenly Brusilov clapped his hand to his head, winced, then recovered his composure and drew a deep breath. He spoke sharply to Smirnov, his words indistinguishable to Arakal.

Behind Arakal, an officer cleared his throat.

"General Brusilov suggests to the Ambassador that if what this must mean is true, then the Ambassador can appeal to the devil's grandmother to save the Russ colonies here. It must be, the General says, that the Americans have rebuilt the railroads."

Smirnov looked as if someone had poured a bucket of ice water over his head.

Arakal leaned forward, smiling.

"Is there anything more natural, Mr. Ambassador? What else is there that will run on coal or wood—and we have plenty of that—and exceed the speed of your fastest tanks and trucks run on expensive fuel? What else can easily outpace all your transport ships and all your warships save only those rare few that ride on narrow wings let down under the water? Is there any other way that we can travel a thousand miles in a day, and move an army from place to place faster than you can transport it by ships, and in far greater numbers than you can move it by air, and in any kind of weather? Why would we *not* connect together whatever well-sited roads of steel survived your at-

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tack, and why would we *not* salvage all the cars and all the engines that can use wood or coal to pull those cars and put our best men to work making new engines? Why not?"

Smirnov said sharply, *"We can do the same thing!"*

"No, you can't," said Arakal. "Not here. There would be nothing easier for us to sabotage. *You* must rely on tanks and iron birds and trucks. You can rely on nothing you cannot guard at all times."

Smirnov shoved back his chair as if to get up.

Brusilov rested a hand heavily on Smirnov's shoulder, and glanced gravely at Arakal.

"What did you ask us here for? To tell us this?"

"To ask the surrender of your army."

Brusilov shook his head.

"Do not catch the conqueror's sickness of quick conceit. Remember, we are a world empire, while you are only a part of a ruined nation that was once great. Do not press too far. Be generous, and hope that we will be generous in turn. To avoid the trouble of a great effort, our leaders might come to an arrangement with you, *if* you are reasonable."

Arakal waited a moment, then said quietly, "We seek nothing that belongs to the Russ. We ask only that which belongs to the O'Cracy's."

Brusilov's face twitched.

"It must be negotiated."

An officer stepped up beside Arakal, and excused himself. "Sir, news of the Russ fleet."

"Speak up," said Arakal. "Our guests will want to know, too."

The officer cleared his throat. "They have passed Cape Cat and are moving at high speed upriver. Their iron birds are scouring the shoreline."

Brusilov straightened. Smirnov sat up in his chair.

Arakal said quietly, "You see, I am being fair with you. But I can do only so much. The more you fight with us, the more determined and filled with anger my men will become. It would be best to surrender to us and be escorted, without the weapons of your men, to the ships. But to be released in that way, the Russ must agree to make no move against any of the colonies which have become ours. Any colonist who wishes may, of course, go home with you, if you care about that."

Brusilov frowned, and spoke carefully, "If the worldwide might of the Soviets were to be concentrated in this spot—"

Slagiron said quietly, "Then all the world would rise up wherever you pulled out."

Smirnov came to his feet.

"I am the Ambassador of the greatest empire—yes, *empire*—on earth." He tilted his head back, and Arakal leaned slightly forward, waiting. Smirnov, however, for some reason, did not say more.

Brusilov said firmly, "We can ac-

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cept no condition that would reflect discredit on our nation."

Arakal said, almost regretfully, "Now that the Army of the South is with us, and the Army of Kebeck, and the Army of Brunswick, and the Maine Militia, I would say you are outnumbered better than three to one. We respect your courage. But you must consider these facts."

Brusilov was silent, but Smirnov said, "You forget our Fleet."

"No," said Arakal, smiling, "I have not forgotten that."

Smirnov gave his head a little shake.

"They are *still* savages. They have learned nothing! Let us—"

Brusilov interrupted, and his voice came out in a roar.

"*Enough* name-calling!" He turned to Arakal. "We thank you for your courtesy; but we do *not* give up! And we remind you that if we decide to put forth our strength, you will regret it!"

Brusilov turned on his heel and went out. Smirnov trailed out after him, then paused at the entrance and looked back.

"I associate myself with everything the Commander has said." He nodded and went out.

Slagiron said exasperatedly, "How do we separate Brusilov from that little worm?"

"We can only send our prayers for that," said Arakal. "We must be very careful now, that in trying to gain all we do not let the whole business slide through our fingers." He glanced at Slagiron. "Let us see how long we can keep them from reaching the St. Lawrence."

Brusilov, so tired by now that each motion took its separate effort of will, stared at the new columns of dust rising parallel to the column of dust raised by his own marching men.

Wearily, he said, "Arakal underestimated his strength to us. This is worse than three to one."

Smirnov peered around.

"It is true. Look, we will be forced into the bend of that big stream."

"Do you think I don't see it? But on this side they are ahead of us in great numbers. We *can't* go straight. We must cross here and hope that we get completely across before they. . . Listen!"

They glanced up.

With a thunderous beat, three helicopters came flying toward them, and swerved suddenly as they took in the situation.

The nearest column of local troops, however, did not break or flee. Instead, they at once swerved to attack Brusilov.

Smirnov cried out, but Brusilov laughed half-hysterically.

"They want to get *close*. They wish to mingle with us to be safe from the bombs." He shouted orders, and his ragged columns broke into a run toward the stream.

The helicopters swerved to attack the oncoming troops.

Under the brilliant sun, the scene

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seemed to hang suspended, the men, the clouds of dust, the planes—all seemed to exist in a moment that would last forever.

And then the helicopters lit in a blaze as of a hundred suns.

Brusilov, stunned, saw the clouds of smoke where the pilots lost control and the planes crashed, but his mind could furnish no explanation. Then a sort of terror seized him, as if he were in the grip of some supernatural force that step by step undid the gains of the past, and would never let up until it had its way.

Shouting and cursing, he drove his men into the stream, led them out on the other side and pointed to the distance, where a shimmer like steel showed the presence of the great river.

Now the enemy was so close, however, that Brusilov in the wild flight could no longer say whose men were his and whose belonged to the enemy. All were fleeing in a tangled jumble, and behind them came a tightly controlled body of cavalry that with repeated charges harried them till they were all one tormented, running, indistinguishable mass of suffering, seeking the river and salvation.

Brusilov, his mind hazed by fatigue and confusion—and the shock of the unexpected and the unpredictable—gave up trying to reason and just thought of the river, and the ships, and peace and safety.

And at last they were there, after no man knew how long. The sun had climbed up past the zenith and was now hanging in the west, and Brusilov, by pure habit, scarcely aware what he was doing, was ordering the men, placing this one or that one in a better position to fire, organizing a defense to hold off the harrying cavalry and the fast-approaching columns of troops.

From all the ships, warships as well as transports, the boats came in and ferried out load after load of stunned, dazed, dead-tired men, men too drugged with fatigue to do anything but clamber into the boats and fall down one on another. Men who stared stupidly when given an order, and had to be moved from place to place by hand. . . But they were getting them onto the ships.

As the big guns of the ships held off the encroaching enemy, Brusilov wished dazedly for rockets, but those, unfortunately, were reserved for special purposes. Still, the guns held off the pursuit, the last men were loaded into the boats, and now it was Brusilov's turn to accompany them, and—

A glare lit the ships, as if the sun, to the west, had risen and passed in a flash to the east, and multiplied itself a hundred, a thousandfold.

From a point of land upriver, a little cloud of smoke rose up in the air.

A plume of water rose high beside the largest of the ships.

A heavy *Boom* reached Brusilov's ears—a sound as of distant heavy thunder.

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Suddenly he was surrounded, horsemen were everywhere, and before he knew what had happened he was caught up; the world spun around him, and he gave it up, and plunged into a deep black quiet that welcomed him into its depths—and long long after, it yielded him up again, refreshed and wondering at the confused impressions that he found in his mind.

Arakal, smiling, was standing beside a round window. "You are awake, General Brusilov?"

"You again," said Brusilov. He sat up, and nodded also to Slagiron. "So, I did not reach the ships?"

"Look around," said Arakal. "Feel the motion underfoot. Of course, you have slept so long that it must seem natural."

Brusilov stared around.

"But why are *you* here?"

"These," said Arakal blandly, "are our ships, taken in return for some little damage you did in Bangor and on the way here."

Brusilov got carefully to his feet. He looked at the bland Arakal and the grinning Slagiron, and peered out the porthole of the cabin. There, riding at anchor, were the other ships of the Fleet.

"How did you do *this?* Are you like those wizards of old you speak of?"

"Did it seem," said Arakal, "that your ranks became somewhat swollen toward the end of the fight?"

Brusilov shut his eyes and sat down on the edge of the bunk.

"My men," said Arakal, "were rescued along with yours—special corps whose uniforms are really not too much different from your own. They were very tired from catching up and joining you, and so they collapsed almost as soon as they were on board. Therefore, Colputt's big multiplied version of his solar flasher did not blind them as it did your men. And so, when they stood up again they found it easy to overpower your blinded men long enough for the rest of my men to get out here. Oh, it was uncomfortable, and our railroad gun almost wrecked everything by taking a crack at you before you tried to get away, but we still got your fleet. It is ours now, but you need only join us, and it will be yours, too."

Brusilov stared at him.

"I tried to tell that fool Smirnov not to underestimate you militarily. And I wound up doing it myself. He is dead, I suppose?"

"No," said Arakal, "I persuaded my men that your great Central Committee will do things to him that we could not dream of, and then the weight will be on *their* souls, not ours. Moreover, to destroy him would be a gain for your side. We are sending him back to them with an offer of peace, if they return the lands of the O'Cracy's."

"You have already got them," said Brusilov. "All except Carteret. I can't believe *that* will hold out long against you, now that our fleet . . . cannot interfere."

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"Why," said Arakal, "there is still the land of the Kebeckers across the sea. And Old Brunswick, from which the New Brunswickers came. All that must be returned to the O'Cracy's. It would be as well to do it. You are stretched too thin holding so much."

Brusilov stared at him a long time, then started to grin. "You are sending Smirnov to carry *that* message to the Central Committee?"

"Yes. We hope they will agree. But in any case, we want them to have him. He is so well-educated, and of such good birth, and knows so much about technology and ideology that it is to our benefit that they have him."

Brusilov grinned.

"And what is your idea about the greatness of . . . yourself, for instance? When your son is King of the O'Cracy's, what will his education be like?"

"We of the O'Cracy's," said Arakal seriously, "believe that only the best man should lead—the best person for the particular job, that is. Not the son of the best man, unless he himself is best. The only way we have found to pick out this best man is to have an election, but that method is not yet perfected. Why not join us, and see if you can help us work out improvements? You have so much experience with Party Members of the fourth generation that you must have done some thinking and have *some* ideas."

"So, you would have me, eh? But then I would be a traitor to my own people."

"Which people? Smirnov—or the Delaware colonists who have joined with us voluntarily?"

"Voluntarily? You *conquered* them!"

"We conquered the troops stationed among them—such of them as woke up in time to fight. We then agreed to keep those like this Smirnov of yours away from them if they would join us. They were very agreeable. They have had much ideology jammed down their throats."

"Ideology," said Brusilov in disgust. "True, it is important. But the fact is that where Charles Martel stopped the advance of the arms of the Arabs, there the advance of Islam ceased. Cromwell defeated the English king, and Puritanism was established. Hitler went down in defeat, and Nazism ended. America overspread the earth, armed with the ideology of democracy and with her know-how and power, and then they took things too easy, and my ancestors got more power than they, and that was too bad for the American dominion. And now this donkey, Smirnov, tells me it is the *ideology* that counts!"

"Well," said Arakal, "it does count. His reasoning has become confused, but the general idea is right."

Brusilov looked doubtful.

Arakal said, "Ideology *counts.* The only catch is—almost always when ideology counts, *it does the counting with a sword.*" ■

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GENERATION GAPS

There's a world of difference between tearing down The 'Establishment and building a New Society. The difference is summed up in one word: Responsibility.

CLANCY O'BRIEN

John Schoenherr

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The stewardess called Lollipop reached in through the webbing around my cocoon and placed a long, slender hand on my arm.

"Is everything groovy, Dr. Benjamin?" she asked dreamily.

I looked quickly away from the chewed, dirty fingernails. "Y-yes, everything is fine," I said, although I was still breathing heavily and my heart was pounding from the extra G's of the mid-course burn that had put Earth-Luna Shuttle No. 6 into lunar orbit.

"Would you like to blow some pot?" she asked.

"No, thanks."

"Then how about I bring you some acid to drop? Turning on while watching the moon from deep space is a trip you'll never forget." She was leaning in through the webbing now, and I could see the sharp points of her breasts under the transparent mini-blouse she wore. Part of her face had also come into view as the cascade of hair caught on the nylon cords. Her eyes reminded me of Little Orphan Annie's, so blank they seemed to have no eyeballs. I wondered what kind of drugs Luna Shuttles permitted its stews to use while on duty and felt a brief tingle of apprehension as I thought about what the two pilots might be blowing, dropping or shooting. But then I recalled that although the copilot was the usual shaggy-haired youth, the captain was a crew-cut, graying man in his late forties.

"Like man," the stew said, "we're gonna be touching down at Tranquillity Farms in two hours. Wouldn't you like to turn on first? That place is a downer, you know. There's nothing there, you know, not even a little grass. It's hell on earth . . . or moon . . . whatever. I'll tell you what . . . I'll bring you a needle and some speed and we'll turn on together and watch the moon approach and . . ."

"NO!" I said, wanting her to leave me alone so I could think about Tranquillity Farms, speculate what it would be like with nothing but fellow Jerries around me and none of *them* within 245,000 miles.

"All drugs are courtesy of Luna Shuttles," Lollipop was saying. "Like they come with your ticket, you know."

"I know, but I don't care for any," I said, willing her to leave. Why couldn't she go hover over some of the other twenty or thirty passengers? She made me nervous. *They* all made me nervous.

"Then maybe you'd dig grooving in another way," she said. There was a rustling sound outside my cocoon and then the webbing was pushed aside and I saw her in her pink and hairy nudity. "Perhaps you'd dig the free sexual experience that also comes with your ticket. Nothing swings like that when you're all uptight."

I had to suck in my breath to keep from screaming. My stomach churned in disgust at the sight of her youthful flesh and my pulses raced in

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terror. It wasn't that I was a prude or had outlived the need for sex, it was just that since the big Kill-Ins in San Francisco and New York I hadn't been able to think of any of *them*—the under-thirties—men or girls as being completely human. For me, it was as though a snake had suddenly shed its skin and offered to climb into bed with me. I looked at the slender white thighs, the firm flesh and the claw-like fingers and thought of death, not sex.

"No . . . no, thanks," I said, my voice shaking.

"Wow, like that's kind of dumb when it's part of the regular tour," Lollipop said.

"I know," I said, looking at her lush lips and remembering how the young Satan cultists had drunk the blood of their victims in Times Square after the New York Kill-In, and how the television newsers had marveled over the fact that the youngsters had so quickly developed authentic rituals to go with their new tribalism.

"Then how about if I just swing up into your cocoon and we'll groove, you know," Lollipop said and lifted one leg.

"No . . . no . . . please, no!" I was almost sobbing with fear and loathing of her youth.

"Wow! That's a real bummer, you know." She stared at me out of her big, nobody-home eyes. "Don't you dig Lollipop? What is your bag then? Are you gay? If you are, we've got a sweet little steward who would be happy to . . ."

"No, damn it, no!" I said. "It's just that I don't care to right now."

"Wow, that's dumb, you know," she said. "For a twenty-thousand-dollar ticket, you know, you oughta take advantage of all the fringe benefits, you know."

"Yes, I know, but . . ." Briefly I considered telling her I loved my wife and that if I were going to be unfaithful with any woman, she would have to be over thirty, preferably over forty. But that wouldn't have been relevant to her. Saying I was in love with my wife who was waiting for me at Tranquillity Farms would have brought a sneer to her lips, and saying that I found a girl of the younger generation physically repulsive would have produced a call for the nearest Sensitivity Training Team.

"Look, I'm over the hill," I said. "You know, I'm getting along. That's why I'm on my way to a Jerry Farm, right? I'm just not up to it anymore."

"But wow, man. That's what Lollipop is here for, to bring you up to it, you know." She was leaning toward me, her lank blonde hair hanging in my face and her acrid marijuana breath foul in my nostrils. "Lollipop is a turn-on girl from the love generation. I've had five years of sex sensitivity training at Berkeley. When Lollipop puts a cat in orbit, he stays there for a week."

"I am sure you're very efficient . . . in your way," I said, "and I ap-

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preciate your interest, but no thanks."

"You sure get some freakouts on these trips," the girl muttered to herself. "They're all copping out and don't know what their vibes need, but Lollipop knows."

She climbed up into the cocoon and reached for me.

"No, let me alone . . . let me alone!" I yelled as the creature's hands touched and caressed me.

"Let me give you love. You're sick, you know," she said. "Your vibes are bad, your aura has turned black. Let me teach you how to love."

"Help! Help!" I shouted.

"Wow, cool it, man, cool it," she said, trying to kiss me with her colorless lips.

I pushed her away, sickened by the unwashed Aquarius smell of her hair and body.

"But wow, man, it's still almost two hours before touchdown, you know. You couldn't possibly do without love that long."

"Oh, can't I? You'd be surprised how easy it'll be for me to live without what you call love," I said, thinking about how much I had missed Beth since she'd gone on ahead of me to Tranquillity Farms a year ago. I had stayed behind because no matter how bad it got, I had to keep teaching, or doing what they called teaching, to raise the twenty thousand dollars a moon trip cost. I'm a normal man, and sex is part of a normal man's life, but despite the constant supply of Aquarian women on campus I had abstained out of simple fastidiousness. I couldn't possibly have become intimate with women I had come to think of as subhuman, women who, like the rest of their generation, were never free from one or another of the drugs the Aquarian age was building its culture around, women who never washed because they followed one or another Eastern religion that taught dirt was holy.

"I guess you're a sex dropout," Lollipop said. "I guess that's why you're leaving Earth and going to live with all those other dried-up old fools who reject love and enlightenment."

"That's right," I said. "I'm over forty and don't dig your vibes."

"Maybe you'd like to talk to Captain Three Feathers," she said. "He's over forty but he digs us. He isn't running off to hide in a hole on the moon."

"Why should I talk to him?"

"Because he always talks to the would-be Jerries," Lollipop said. "If my grooving doesn't persuade them, he raps with them one-to-one and they see reason about those fuddy old farms. Peace Village has given him several awards—Friendship Beads, first and second class—for talking Jerries out of throwing away their lives."

"I suggest he devote his time to getting ready to set down rather than waste his time with me," I said. "Isn't the motto of the Now Govern-

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ment 'Do your own thing'? Well, that's what I'm doing."

"Yes, but you don't really know what your thing is because you've never turned on and never expanded your consciousness." She turned to leave, opening the hatch and floating out in the null gravity. "I'll send Captain Three Feathers to see you."

"Well, Professor Benjamin, it's a pleasure to meet you," Captain Three Feathers said, sticking his short-cropped head through the webbing and thrusting a big strong hand at me, "but not under these circumstances."

I shook the hand gingerly. The Captain came on all brusque good fellowship, without the vague meandering conversational manner of the Aquarians.

"What's wrong with the circumstances?" I asked.

"I hate to see a man of your recognized scholarly abilities copping out, deserting the ship, as it were."

"The ship is sinking. That's when you're supposed to desert it."

"Nonsense! We're just going through a period of change that will bring about a better world. After all, we've got the most brilliant generation of young people in the history of the world. They demanded change and we've given it to them. Now they'll make a better world."

I tried to remember when I had first heard that phrase "the most brilliant generation in the history of the world." It seemed to me it had been after the first university had been burned. The Captain Three Feathers of my generation had kept on saying it with unrelieved optimism through the last twenty years as the Aquarians had taken over. One by one the universities had burned or changed, one by one the libraries went up in flame, book by book the thoughts of a thousand years were destroyed because *they* said, "The past doesn't matter . . . it isn't relevant. There are only a handful of writers who are relevant, destroy the rest. Marx, Marcuse, Fanon, Leary, McLuhan, Rubin, Hoffman . . . the rest don't matter. Burn . . . burn . . . burn . . . burn!" It all went.

The Captain was very straightforward, very persuasive. He talked about the duty of those of us who had skills to use those skills to help the new people, the brilliant youth who needed only guidance in their determination to build a paradise on Earth.

"My friend, I'm a teacher," I said. "That is a skill that has ceased to have any application in the world back there. What is being taught at the universities today doesn't need teaching. It used to be picked up quite easily behind fences and in little boys' rooms. The kiddies are quite capable of handling it themselves. They parade around dressed as painted cowboys and imaginary Indians and the ones who can read pour over the *I Ching*, astrological tables or macrobiotic cookbooks."

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"Ah, but the young still need guidance," Captain Three Feathers said. "The reason for the existence of the universities today is to supply a forum in which the young and the old confront each other, and the young are models for the old. Right, Dr. Benjamin?"

"That's what is inscribed over the door of the administration building back at Stanford where I taught," I said.

"But how can the young supply a model for the old if the old run away and refuse to have their minds expanded?" Captain Three Feathers asked.

"Have they expanded your mind, Captain?" I asked.

"Well, I . . . I'm a technician. My duty is to keep things running until better ways are found . . . more natural ways that will replace the insensitive materialistic ways of the old world with the spiritual values of the Aquarian age."

"You're saying then that your mind has not been expanded?"

"No, it hasn't," he admitted.

"Good," I said. "I'll feel much better when it comes time to set this thing down knowing that your mind is still in its unenlightened, unexpanded condition."

The captain looked a little sad. "Then you won't reconsider and go back and resume your teaching?"

"Captain, I wonder if you'd like to see a brief prospectus of the next semester's schedule at Stanford?" I took a pamphlet out of my pocket and let it float into his hands. He took the list and read it, a slight frown creasing his tanned forehead. I knew what he was reading by heart. I knew what courses were being offered at what had once been a seat of learning.

Macrobiotic Cooking, *I Ching,* History of Rock, Glass Blowing, Astrology and Palmistry, Indian Dancing, Comic Book Appreciation, Black Magic, Handwriting Analysis, Stained Glass Windows, Sensitivity Training, Boy-Girl Love, Boy-Boy Love, Girl-Girl Love and a few dozen others that, in the words of our eminent dean, were supposed "to free our students for pleasure and help them to cultivate a life style in which they would remain, in their minds and hearts, forever children."

"Do you really see any point in my returning, Captain?" I asked when he had finished reading.

"I just know that a man doesn't desert his post. He doesn't give up a lifetime of work and retire into nonproductivity at fifty."

"Maybe you don't, Captain, because what you're doing is still useful, but teaching has become a profession without a purpose."

"I'm sorry you see things that way, Professor," he said, turning to leave. "You're giving up on the most wonderful generation of young people the world has ever . . ."

I closed out the rest of his words, wondering if he was as free of mind expansion as he claimed. It sounded

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as though that litany about the young had been engraved on his mind with the same phonograph needle that had been used on the minds of most intellectuals during the last twenty years.

"Touchdown will be in one hour," a voice said over the intercom. "Now is the time for all you dropouts to change your minds and return to Mother Earth and the Aquarian Age."

I listened to the voice and wondered at all the attempts to get us to go back. Always before, *they* had seemed only too glad to get rid of the Jerries. To them we were a drag. We refused to conform to their drug culture, we insulted their sensitivity with our clothes, our short hair and our smell of soap. Always before they had been overjoyed that thousands of over-fifties and over-forties were choosing to enter the Jerry Farms on Luna, along the Amazon and in Antarctica. But now . . . now they seemed to have reversed themselves and were begging us to stay. Was it just part of their usual faddism or did it have something to do with the things that strange young man from Wash—no, Peace Village—had told me that day about a week before I left Earth.

I remembered the odd apparition that had appeared on my doorstep one morning. It was the typical long-haired, bearded Aquarian of about thirty-five with the drugged Orphan Annie eyes, the look that is the sign of the self-imposed prefrontal lobotomy. But this was an Aquarian with a difference. Although he wore a hairband and sandals and his neck was hung with the usual mass of beads, he was also wearing the morning clothes and top hat that had once marked the diplomat and was carrying a briefcase.

"Like where's it at, man?" he greeted me.

"I'm sorry, where is what *at?*" I asked.

"I was like saying hello, man," he said. "I'm Little Running Rabbit, Chief of Jerry Retention, State Department, you know."

"No, I didn't know," I said, "but I suppose it's possible. These days anything is possible. Is there something I can do for you?"

"Like man, I come to one-to-one you," Little Running Rabbit said. "We're going to be out front with you on this one."

"I . . . I'm not sure I understand," I said.

"Man, we—the United Communes, you know—understand you're uptight about the way things have been grooving. We been getting bad vibes from your aura, you know. Like man, that's a nothing trip."

"Am I to understand that this is a reprimand from the Gov—I mean, the Gurus of the United Communes?"

"Man, no chance," Little Running Rabbit said. "Your grooves are our grooves. When Professor Morris Benjamin is giving out bad vibes, all his brothers in Peace Village are giv-

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ing out bad vibes too, you know. We don't put nobody down. 'Do your own thing,' is the motto under the Dove of Peace on the great seal, isn't it?"

"Yes, I'm afraid it is."

"But why, man? Why you been putting us down so? Why you been giving out pain to your brothers?"

"Well, I'm sorry if I've been giving pain to . . . ahem, my brothers in Wash—I mean, Peace Village—but I don't know what I've done to cause it."

"Man, you applied for a pad at Tranquillity Farms. That is a real downer for us, you know. It makes us feel like, you know, we haven't been rapping one-to-one with you."

It was a bit difficult to be sure exactly what the Aquarian was saying but I got the impression he meant the government felt it had failed to communicate its essential good intentions to me.

"I've not only applied for a retirement home at Tranquillity but my wife is already there and I've received verification of my reservations on the Luna Shuttle for the next bimonthly flight."

"Oh, bad scene . . . bad scene. Man, that's like running away . . . copping out, you know."

"I prefer the word retiring to copping out," I said.

"Man, look, it's like you're only fifty. You got years of teaching ahead of you, you know," Little Running Rabbit said.

"My friend, " I said, "the retirement laws purposely allow for early retirement so younger men can take over in the universities . . . Aquarians who can teach the counterculture more efficiently."

"Right, man. That's the way it grooves all over the country," Little Running Rabbit said, chewing on his cheek in a way that reminded me of a real rabbit. "The counterculture is required, but it's like this, man. Some of the big gurus at Peace Village have been thinking, you know, about how maybe we're losing something, you know, something important, because all the uptights are running off to the Jerry Farms. They're leaving the schools, the farms, the law courts, the laboratories, the engineering jobs. It's getting so things are starting to break down. It's like the tech . . . technology is running down. Man, it's a real bummer when you can't even get your electric guitar fixed and there isn't enough electricity for the light shows."

"But it was the technology, the materialistic technology, that your generation rebelled against," I reminded him. "Weren't you going to replace it with a tribal village where everyone lived close to nature and loved everyone else?"

"Right on, brother," the government man said, "but it's like you got to groove a little on both tracks. You got to have love, but you got to keep things going. I mean, cats and chicks are starving to death all over since . . ."

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"Since the remittance checks from old uptight Dad back in Squaresville quit coming in," I suggested.

"No chance," he said. "It's since the food trucks quit coming into town, since the supermarkets quit throwing away piles of food and since there's nobody left to run the canneries."

"What about your macrobiotic gardens?" I asked. "What happened to the self-supporting communes?"

"Like that takes time, you know. Kids got to get used to, you know, like working and digging and all. Well, it just ain't everybody's thing."

"Get used to it? My God, they've had twenty years!"

"But it's like nobody expected the whole thing, the whole society to start running down, you know. Man, all those engineers and technicians and teachers have got to be really spaced out to go running off to bury themselves in holes in the ground called Jerry Farms. They ain't got no commitment . . . they got no love in them . . . no love for their own children."

"No, I don't suppose many of us have," I said. "I know I haven't since the New York and San Francisco Kill-Ins."

"Man, that was like fifteen years ago," Little Running Rabbit said. "That was when there were a lot of freakouts in the movement, you know, a lot of plastic types and Satan cultists, you know. That was before everyone became like Woodstock, with the peace scene, you know."

"Nevertheless, I'm on my way to Tranquillity Farms," I said. "The Luna Geriatric Farms are completely self-sustaining even if the Earth communes are not."

"Like man, don't rap that way," Running Rabbit said. "You haven't heard the big scene the gurus said I should put on you. We're gonna fix it up for all the squares, you know . . . all the ones who stay, that is . . . with a really far-out scene."

"Such as?"

"Like for you, it's gonna be a real swinging pad, you know. A kind of city commune set up with all the groovy chicks you want to ball, unlimited free pot and acid, you know. And all we're gonna ask you to do is kind of like run this school your own way, and the local gurus will pick out a few of the less wild young ones and maybe you could teach them something, you know . . . You're shaking your head. What's the matter, man, ain't we been one-to-one with you? Don't you . . . no, I guess you don't. None of the others did either."

He was letting the conversation drift into the nonlineal rap session so much admired by the Aquarians as a means of noncommunication. He was wasting his time and mine, and I told him so.

What little I could see of Little Running Rabbit's face through the hair looked doleful as he picked up his briefcase, put his top hat on over his hair ribbon and walked toward the door.

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"It just don't vibe . . . it just don't," he muttered. "But I got to keep trying, got to keep rapping with the squares . . . can't stop now with Los Angeles' electricity off for three weeks and Chicago without water . . . got to keep rapping even if they are all pigs."

Then he stopped and turned back to me. "One more thing I got to tell you, one thing I think you ought to know before you go rushing off and leave all this behind . . . it's like we need . . ."

Little Running Rabbit's voice faded from my mind as the intercom made a whistling sound and I heard Captain Three Feathers' voice.

"Now this is the Captain speaking. We will be firing our braking rockets in ten minutes for touchdown at Tranquillity Farms. Passengers will please strap down for extra G's. Please strap down. And I would like to take this opportunity to urge all of you one more time to reconsider your decision to cop out and leave your children behind. Think what a lack of commitment this shows on the part of our generation, throwing up our jobs and forcing these young people to assume responsibilities they are perhaps not quite prepared for yet. I'd . . ."

"Children! Young people! For Christ's sake!" I shouted. "The Aquarians are in their middle thirties! They've lived over half their lives! They insisted on taking over society. Now let them run it!"

". . . a great lack of responsibility on your part in choosing a sterile, unproductive retirement instead of remaining in the thick of the battle to improve society . . ." the Captain was going on, but I shut his voice out as I hurriedly strapped myself in and settled back to wait for deceleration.

Then Lollipop was back. She was jaybird naked and had a marijuana joint in her mouth and a hypodermic needle in her hand.

"I'm going to give you one more chance to turn on with Lollipop," she said. "I've got some of the best smack you ever grooved on in this needle so you and I can turn on during touchdown . . . doesn't that sound groovy?"

"You get the hell out of here!" I yelled. "Don't you come near me with that needle! I don't want anything to do with you or your drugs!"

Lollipop's face puckered up and she started to cry. "That's the way it's always been. That's the gap. You've never wanted anything to do with us or our drugs. You've never understood . . . none of you has ever understood us."

"That statement is right on, sister!" I said and she disappeared from the hatch of my cubicle blubbering.

Half an hour later, the shuttle had settled onto the smooth floor of the Sea of Tranquillity and been coupled to the tunnel that led to the passenger terminal. I was hurrying through the air lock, down a pressurized ramp into a brightly lighted underground tunnel, the two small suit-

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cases that were all I could afford to bring with me gripped in my hands.

Beth would be waiting for me, and my feet felt as though they had wings as I hastened through the tunnel, but I couldn't help thinking about the look on Lollipop's face and the desperation in her voice. *They* felt deserted, but hadn't *they* deserted us first? And why . . . why had it all happened that way when our intentions had been so good?

They were the first generation whose mothers, following the dictum of Dr. Spock, had always picked them up when they cried. *They* were the first generation that had been raised on a diet of T.V. and, with McLuhan's blessing, had rejected books. Now their children . . . oh, my God, *their* children were growing up! No wonder even some of *them* were frightened.

No wonder Little Running Rabbit and some of the gurus were getting desperate. *Their* children were the first generation raised in the pads and the communes, weaned on LSD and lullabied with rock music, deliberately kept illiterate–some barely able to speak–spoon-fed hatred for The Establishment and then turned loose in the streets. Now quickly the Age of Aquarius was becoming the Age of Monsters with the appearance of the second generation. The Pyros, the compulsive arsonists; the Vamps, the blood-sucking youngsters who littered the streets of every city with victims; and the Eaters, the cannibalistic teen-agers who raged through the major cities in packs of thousands, totally beyond the control of the Aquarians of the United Communes. No wonder some of *them* were frightened . . . as frightened as we had been when we realized what we had spawned.

But wasn't there still a chance? I was only fifty and Beth was thirty-nine. I had decided against having children when I realized how things were going, but here in the Jerry Farms away from the body-destroying drugs and mind-blasting rock a child could be raised rationally. Since the invention of the new atomic fuels, it had been possible to transport everything needed to maintain human life to Luna, and also to move whole libraries and museums–a large part of the cultural heritage of mankind–to a place of safety from the bombers and burners. Wouldn't it be ironic if the dead satellite sustained only by man's reason and technology could give man another chance while the race was destroying itself on the mother planet with its superstition and irrationality?

Imagine raising children in an environment free of drugs, free of rock music and out from under the influence of a media that always exploited the dissident, the irrational and the violent.

"Dr. Benjamin, wait! Wait for me!" a voice called from back down the tunnel.

I turned and looked back. Captain

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Three Feathers was struggling with Lollipop, the copilot and another stewardess.

"Let me go, dammit, let me go!" he was yelling as he lashed at them with his big strong arms. "It's all going back there on Earth, can't you see that?"

It was then I saw something, or rather someone, clinging to his hand. It took me a second or so to figure out what it was. It had been a long time since I had seen a short-haired five-year-old, but I was sure it was a little boy. And that, I suddenly realized, was the reason for Captain Three Feathers' devotion to the Aquarians. He had the misfortune to be a father.

"Don't leave us . . . please, don't leave us!" Lollipop was screeching. "We need you! Can't you see how much we need you?" She had fallen to her knees in front of the Captain and was kissing him desperately on the feet and legs. "Love us . . . love us as we love you! We haven't anyone else to love us . . . *they* never will!"

"Captain, you can't leave us!" the befeathered copilot yelled. "I don't know how to take this thing back! I can't run the computers! I can't compute an orbit or keep the life-support systems going!"

"What the hell do I care?" Three Feathers shouted, running toward me. "Haven't you been seeing it on your screens? Don't you know the whole thing is going? The Vamps and the Eaters have taken over the countryside and the Pyros are burning down the cities, and no one knows how to stop it any more than we knew how to stop you. But I've got my son; I'm saving something. Dr. Benjamin, wait for me, wait for me!"

He caught up with me, his breath coming in short gasps as he clung tightly to the child in his arms. "I raised him in my cabin on the ship . . . he's never set foot on Earth . . . he's never had drugs . . . never heard the music . . . never listened to the superstitions . . . so I think he'll be all right."

"Of course he will," I said, thinking about what he said was happening back on Earth, thinking about the last thing Little Running Rabbit had said to me.

The youth—hell, he was thirty-five!—had told me about their *thems,* the fifteen-year-olds who were coming up behind his generation and how terrified the gurus were of them.

"Don't leave us," Little Running Rabbit had said. *"They're* coming up behind us and we don't know what to do about them. We need help. For God's sake, don't leave us. These kids are really spaced out and we don't know what to do."

I had tried to hold them back but the bitter words had come. "You raised them!" I told him. "You raised them *your* way . . . not our way!"

Then he had hurled the words at me, the words that were at once a barbed missile and a stinging indictment.

"But you raised us!" he had said. ■

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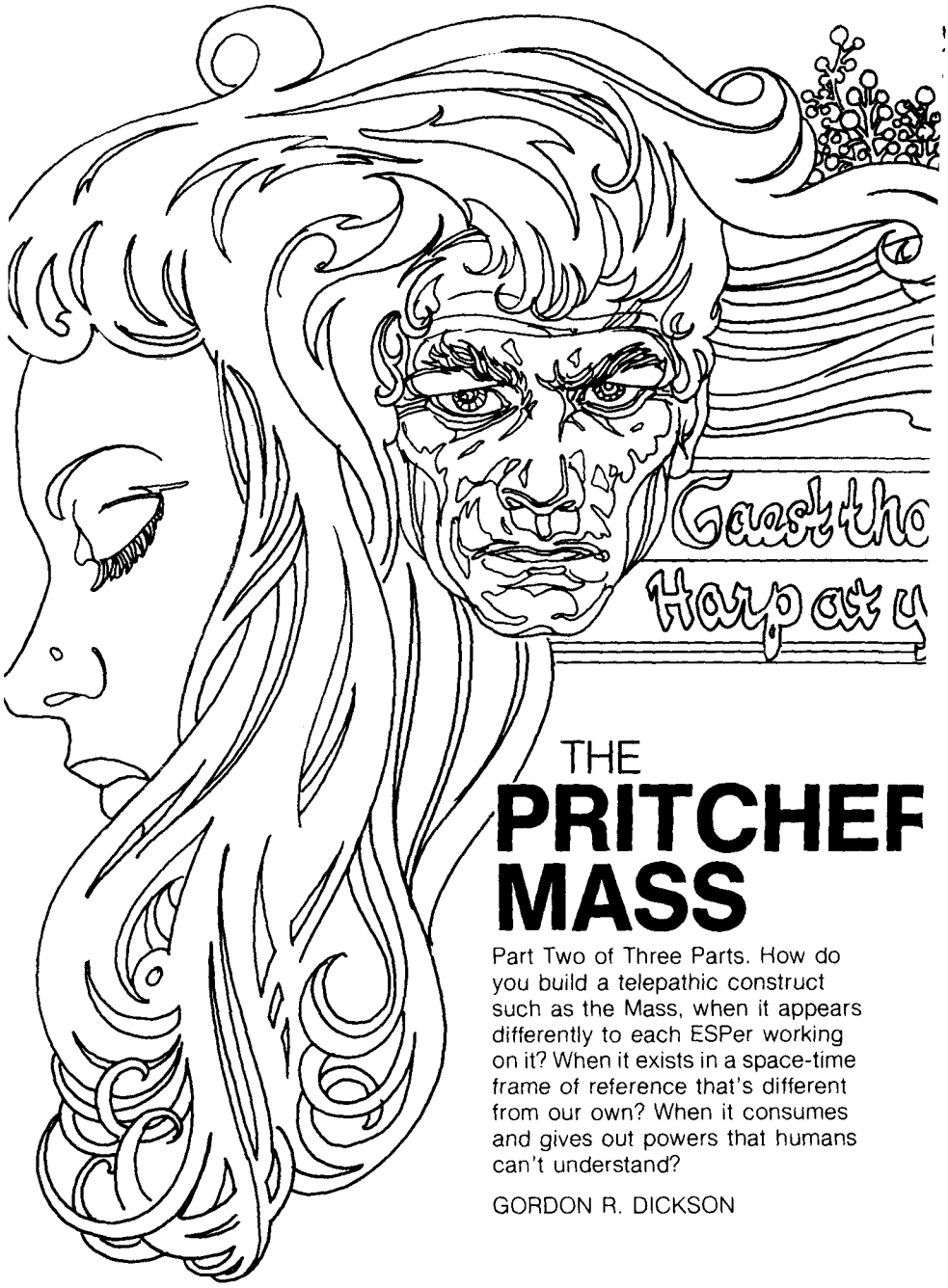

THE PRITCHEF MASS

Part Two of Three Parts. How do you build a telepathic construct such as the Mass, when it appears differently to each ESPer working on it? When it exists in a space-time frame of reference that's different from our own? When it consumes and gives out powers that humans can't understand?

GORDON R. DICKSON

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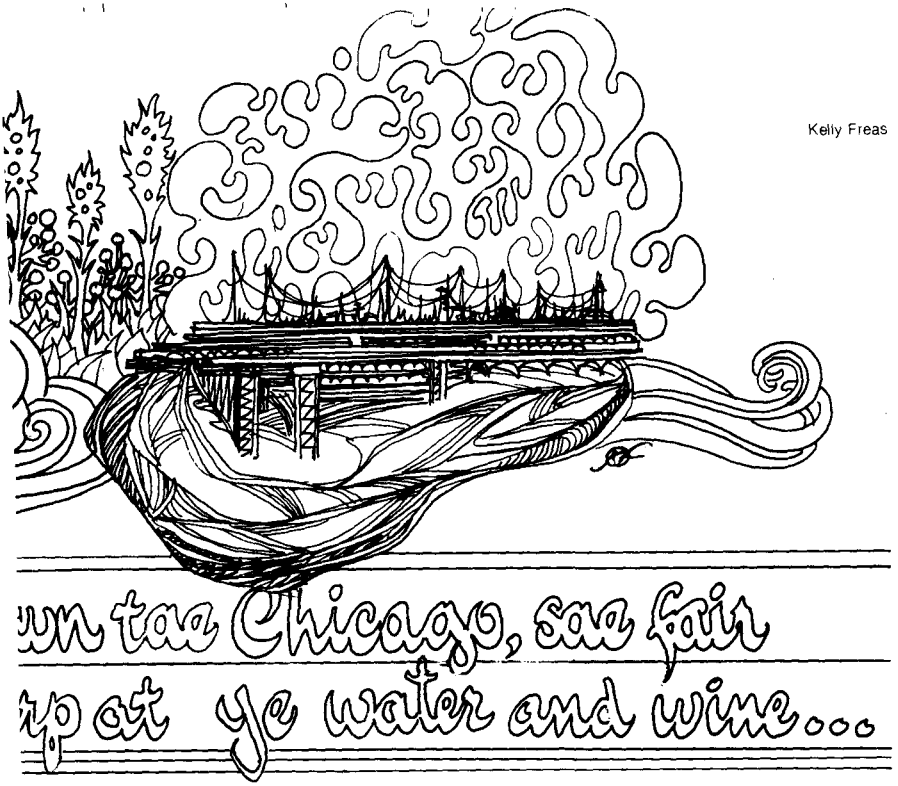

SYNOPSIS

Chaz (Charles) Roumi Sant, making the evening commuter run by sealed train from Chicago to his apartment in the Wisconsin Dells, is grimly angry with himself because for the sixth time he has failed to pass a test of his talent for chain-perception, an extrasensory ability that is required for work on the Pritcher Mass. The Pritcher Mass is a psychic construct, a nonmaterial "tool" being built out beyond the orbit of Pluto to enable humanity to locate and examine habitable worlds, to which a seed community of selected men and women can emigrate, to ensure survival of the human race. Humanity on the Earth itself is doomed within generations. Planetwide pollution has culminated in the development of a plant mutation called the Job's-berry Rot, the wind-borne spores of which, once inhaled, take root in the moist environment of human lungs and grow until the afflicted person literally chokes to death. There is no known

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cure. On Earth, what is left of socially ordered mankind lives in sealed cities; anyone suspected of being infected by the Job's-berry spore is immediately exiled to the open planetary surface before he or she can exhale spores and infect others. Once outside the sealed environment, death from the Rot comes in a matter of months.

The only safe place away from the Job's-berry is the Pritcher Mass Project. Chaz has been determined to qualify for work on it; but every time he takes the chain-perception test, something seems to frustrate him in demonstrating the talent he is sure he possesses.

Meanwhile, his train is blown off the tracks, and the car Chaz is in is split open, exposing all within to the Rot. Infected or not, by law all those within must be exiled; but Chaz uses a nonsterile rock he picks up from the railroad ballast as a "catalyst" to release his talent for chain-perception and works out a way to smuggle himself back in among the still-sterile commuters being rescued from other cars.

At the Dells, Chaz returns to his locked apartment to discover there, Eileen Mortvain, a girl he had met only once before at a dimly remembered condominium party. She has been praying and meditating at his apartment's sterile Earth altar for his safety. As they are talking, they are interrupted by the reappearance of a woman Chaz had saved from the train. The woman tries to blackmail Chaz, threatening to tell the authorities about the unsterile "catalyst" rock Chaz has brought home with him.

The woman leaves and Chaz passes out. He has a strange dream about conversing with two aliens—one a giant snail, the other a large praying mantis. When he comes to, he hears Eileen singing an odd song to him. Eileen offers to help Chaz hide until he can qualify for work on the Pritcher Mass, which would give him immunity to any Earthside persecution. They go to her apartment, where she picks up a wolverine named Tillicum. With the help of the wolverine, she gets them all into the service tunnels connecting the basements of buildings. They ride a delivery belt toward an unknown destination; and Chaz, adding up a number of clues, accuses her of being a Satanist, one of a cult group said to have connections with the Citadel—as the organized crime world of their time is called.

She denies Satanism; but she does admit to being a witch. Witches are now recognized simply as men and women with paranormal talents who have for centuries formed an underground group of their own. Eileen takes Chaz to a "Witches' Hole" and there he meets a male witch known simply as the Gray Man, who is the coven's business link with the criminal organization, the Citadel. Eileen has no fear of the Gray Man because her paranormal powers as a witch are greater than his—in fact, greater than most. However, the Gray Man accuses her of having lost her powers, for the oldest of witch-legend reasons. She

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has fallen in love--with Chaz Sant.

Eileen is forced to try her powers against the Gray Man; and finds he is correct—at least for the moment, she is helpless. That is the last Chaz remembers, as the Gray Man "takes" him, and he falls unconscious.

He wakes in a place of no sound, light, or sensation. After a bit he reasons out that this is a sense-deprivation chamber, a modern version of the older device used in brainwashing. This illegal device confirms his suspicion that for some reason the Citadel wants him out of the way and now has him in its grasp. Chaz fights the sensory vacuum by using chain-perception to build an imaginary universe—and once more dreams of the snail and the mantis. He wakes this time to find himself being taken out of the chamber by two men in hospital coats, who evidently consider him reduced to helplessness. He overcomes them both, puts on the white uniform of one of them, and goes in search of Alex Waka, the Pritcher Mass examiner who has been testing him for chain-perception. He persuades Waka to give the test once more—and this time qualifies for the Mass, thus gaining immunity until the shuttle for his spaceship leaves.

Waka, in a sweat to get rid of him because he fears the Citadel, advises Chaz to take sanctuary with the Pritcher Mass authorities. Instead, Chaz goes in search of Eileen. When he finds her apartment empty, he phones a fellow apartment-dweller who says that Eileen is with her. Chaz is about to go there when the wolverine Tillicum materializes in the dim apartment hallway and warns him that the phone message is a trap. Tillicum tells Chaz that he must not try to find Eileen, and further, that he can save Eileen by going to the Mass.

Chaz obeys the message brought by the wolverine, goes to the Pritcher Mass Earth headquarters, and twenty days later, he is landed on the Mass. A tall, strikingly handsome, slim man meets him in the air lock entrance to the metal platform on which the nonmaterial Mass is being constructed. He gives Chaz one last chance to decide against working on the Mass. When Chaz does not turn back, the slim man accepts him as one of the Mass personnel, and introduces him to a legend carved over the door leading to the platform's interior:

"ALL EARTH ABANDON, YOU WHO JOIN US HERE."

Part 2

VII

Chaz stared at the words, then turned to the slim man.

"What does it mean?" he asked.

"That's something it'll take you a few months here to fully understand," said the other. "You'll be getting a brief version of the answer in a few minutes. Come inside now."

He led Chaz through the doorway. The heavy outer lock door slid to behind them with a shivering crash of metal; and lights flashed on to show

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Chaz that they stood in the lock, itself a space at least the size of Waka's apartment with the two rooms of it thrown into one. A sudden tug of nearly one G on his body surprised him; and then he remembered that the Mass had space to spare—even enough to provide a room for the generators necessary to generate a continuous gravity field. Airsuits hung on a rack along one wall to Chaz' left. Along the wall to his right was another rack, holding blue coveralls. Between both walls, at the far end, was the inner lock door, which was now beginning to open.

"Get dressed," said the slim man, waving at the rack of coveralls. Chaz obeyed, and when he finished found the other ready with a hand outstretched to him. "By the way, I'm Jai Losser, the Assistant Director on the Mass. Sorry, but our rule is we don't even give our names outside that door."

Chaz shook hands.

"Charles Roumi Sant," he said.

"Oh, I know your name," Jai laughed. He had a pleasant laugh and his thin face lit up with the good humor of it. "We've got a heavy dossier on you, phoned over from the supply ship with other mail and information when she was docking. I'm going to take you now to meet the Director, Lebdell Marti. He'll give you your initial briefing. Know where you are right now, on the Mass?"

"I've seen diagrams," answered Chaz.

In fact, those diagrams had been in his mind more than once on the twenty-day trip here. They had shown the Pritcher Mass as a unit made up of three parts. One part was an asteroid-like chunk of granitic rock about twelve-by-eight miles, roughly the shape of an egg with one bulging end. Covering half of the surface of this rock was a huge steel deck, some fourteen stories thick. From the upper surface of this deck rose what looked like an ill-assorted forest of antennae; steel masts of heights varying from a hundred meters to over a kilometer. Between the masts, steel cables were looped at intervals; and small power lifts or cable cars moved Mass workers up the masts or across the cables.

Surrounding and extending beyond the masts and cables was something that did not show to the human eye or to any physical instruments—the Mass itself. In the diagrams Chaz had seen, the illustrators had rendered it transparently in the shape of an enormous shadowy construction crane—although no one was supposed to take this as a serious rendering of its actual form, any more than anyone could seriously imagine a physical crane that could swing its shovel across light-years of distance to touch the surface of a distant planet.

"Third level, west end, aren't we?" Chaz asked. "West" was, of course, a convenience term. For purposes of direction on the Mass itself, one end of the platform had been arbitrarily

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labeled "west," the other "east." "Up" would be in the direction of the deck surface overhead.

"That's right," said Jai. He had a soft bass voice. "And we go in to Centerpoint to the Director's office."

He led the way out of the lock into a somewhat larger room, half-filled with forklift trucks and other machinery for transferring cargo. Some of these were already trundling toward the lock on automatic as the two men left it.

"It'll take thirty hours or so to get all the supplies off, and the ship ready to leave again," said Jai, as they went through swinging metal doors at the far end of the machinery room, into a wide corridor with a double moving belt walkway both going and coming along its floor. Jai led the way onto the belt and it carried them off down the brightly lighted, metal-walled corridor. "This is our storage area. First level."

"Living and work levels are above us?" Chaz said, as they passed an open doorway and he looked in to see a warehouse-like space stacked with large cartons on pallets.

"Levels four to six and eight to fourteen are quarters and work areas," answered Jai. "Seventh level is all office–administrative. Originally, living quarters for the administrative people–the nontalented–was to be on seven, too; but it was felt after a while that this made for an emotional division among the people here. So now the administrators have apartments with the rest of us."

"Us?" Chaz looked sideways at the other man. "I thought you said you were the Assistant Director?"

"I am," Jai said. "But I'm also a worker on the Mass. The workers have to be represented among the administrative staff, too. Leb, the Director, is a nonworker." He smiled a little at Chaz. "We tend to talk about people here as divided into workers and nonworkers, rather than talented and nontalented. It is a little more courteous to those who don't have the ability to work on the Mass."

Chaz nodded. There was a curious emotional stirring inside him. He had thought about working on the Mass for so long that he had believed he took it for granted. He had not expected to find himself unusually excited simply by actually being here. But he found he was; in fact, remarkably so. And it was hard to believe that this geared-up sensation in him was only self-excitement.

"I feel hyped-up," he said to Jai, on impulse. He did not usually talk about himself; but Jai had an aura about him that encouraged friendship and confidences. "Funny feeling–like being too close to a static generator and having my hair stand on end. Only it's my nerves, not my hair, that's standing up straight and quivering."

Jai nodded, soberly.

"You'll get used to it," he said. "That's one reason we know the Mass is there, even if we can't see it,

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touch it, or measure it—that feeling you mention. Even the nonworkers feel it. In spite of the fact that they aren't sensitive to anything else about it."

"You mean people with no talent can *feel* the Mass, up there?" Chaz glanced ceilingward. "That's sort of a contradiction in terms, isn't it?"

Jai shrugged again.

"Nobody can explain it," he said. "But then, just about everything we're doing here is done on blind faith, anyway. We try something and it works. Did you ever stop to think that the Mass we're building here may be a piece of psychic machinery that was never intended to do the thing we're building it for?"

"You mean it might not work?"

"I mean," said Jai, "it might work, but only as a side issue. As if we were building an aircraft so that we could plow a field by taxiing up and down with a plow blade dragged behind our tail section. Remember, no one really knows what the Mass is. All we have is Jim Pritcher's theory that it's a means of surveying distant worlds, and Pritcher died before work out here was even started."

"I know," said Chaz. He glanced appraisingly at the Assistant Director. What Jai had just been talking about was a strange sort of idea to throw at a newcomer who had just arrived for work on the Mass. Unless the other had been fishing for some unusual, unguarded response from Chaz.

They went on down the corridor and took an elevator tube upward to the seventh level. Getting off at the seventh level, they went east a short distance down another corridor and turned in through an opaque door into a small outer office where a tiny, but startlingly beautiful, black-haired girl, looking like a marble and ebony figurine, sat at a communications board talking with someone who seemed to be the cargo officer aboard the supply ship Chaz had just left.

". . . *thirty-five hundred units, K74941,*" she was saying as they came in. She looked up and gave them a wave before going back to her board. *"Check. To Bay M, pallet A4*—go right in Jai. He's waiting for you both—*nineteen hundred units J44, sleeved. To Bay 3, pallets N3 and N4* . . ."

Jai led Chaz on past her through another door. They came into a somewhat larger room, brown-carpeted, dominated by a large desk complex of communicating and computer reference equipment. Seated in the midst of the complex was a large, middle-aged, gray-skinned man full of brisk and nervous movements.

"Oh, Jai—Mr. Sant. Come in—pull up some chairs." Lebdell Marti had a hard baritone voice, with a faint French accent. "Be with you in a moment . . . Ethrya?"

He had spoken into the grille of his communicating equipment. The voice of the living figurine in the outer office answered.

"Yes, Leb?"

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"Give me about ten or fifteen minutes of noninterruption? No more, though, or I'll never get caught up."

"Right. I'll call you in fifteen minutes, then."

"Thanks." Lebdell Marti sat back in his chair, the spring back creaking briefly as it gave to his weight. Then he got to his feet and offered his hand to Chaz, who shook it. "Welcome."

They all sat down, and Marti rummaged among his equipment to come up with a thick stack of yellow message sheets.

"Your dossier," he said, holding the stack up briefly for Chaz to see, then dropping it back down on the desk surface of his complex. "No great surprises in it, as far as I can see. All our workers on the Mass are strong individualists, and I see you're no exception. How do you feel about being here at last?"

"Good," said Chaz.

Marti nodded.

"That's the answer we expect," he said. His chair creaked again as he settled back. "Jai pointed out to you the message over the air lock on the way in? Good. Because we take those words very seriously here, for a number of reasons. You'll be learning more about that as you get settled in here; but basically it adds up to the fact that work with a psychic piece of machinery like the Mass requires an essentially artistic sort of commitment. The Mass has to be everything to each one of us. Everything. And that means any commitment to Earth has got to be pushed out of our heads completely. Now . . . how much do you know about the Mass?"

"I've read what's in the libraries back on Earth about it."

"Yes," Marti said. "Well, there's a sort of standard briefing that I give to every new worker who joins us here. Most of it you've probably read or heard already; but we like to make sure that any misconceptions on the part of our incoming people are cleared up at the start. Just what do you know already?"

"The Mass was James Pritcher's idea," said Chaz, "according to what I learned—although it was just a theoretical notion to him. As I understand it, he died without thinking anyone would ever actually try to build it."

Marti nodded. "Go on," he said.

"Well, that's all there is to it, isn't it?" Chaz said. "Pritcher was a research psychologist studying in the paranormal and extrasensory fields. He postulated that while no paranormal talent was ever completely dependable, a number of people who had demonstrated abilities of that kind, working together, might be able to create a psychic construct—in essence, a piece of nonmaterial machinery. And possibly that kind of machinery could do what material machinery couldn't, because of the physical limitations on material substances. For example,

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maybe we could build a piece of psychic machinery that could search out and actually contact the surfaces of worlds light-years from the solar system—which is exactly what the Mass is being built to do."

"Exactly," murmured Jai. Chaz glanced at the tall man, remembering Jai's words about the Mass possibly being something other than it was intended to be.

"That's right—or is it, exactly?" echoed Marti, behind the complex. "Because the truth is, Charles—"

"Chaz, I'm usually called," Chaz said.

"Chaz, when we get right down to it, we really don't know what we're building here. The Mass is nonmaterial, but it's also something else. It's *subjective.* It's like a work of art, a piece of music, a painting, a novel—the abilities in our workers that create it are more responsive to their subconscious than to their conscious. We may be building here something that only seems to be what our conscious minds desire: a means of discovering and reaching some new world our race can emigrate to. Actually it may turn out to be something entirely different that we desire—with a desire that's been buried in the deep back of our heads, all along."

"The Mass may not work, then, you mean?" Chaz said.

"That's right," said Marti. "It might not work. Or it might work wrong. We only know that we're building anything at all because of the feedback—the *feel* of the presence of the Mass. You've already sensed that, yourself?"

Chaz nodded.

"So, maybe we're just in the position of a group of clever savages," Marti said, "fitting together parts of a machine we don't understand on a sort of jigsaw puzzle basis, a machine that may end up doing nothing, or blowing up in our faces. Of course, we've come a long way in the last fifty years. We realize nowadays that paranormal or psychic—whatever you want to call them—abilities do exist in certain people; even if they can't be measured, dealt with, or used according to any rules we know. But a lot of that distance we've come has also been downhill. For one thing—the most important thing—we managed to foul our nest back on Earth, until now it's unlivable. Not only that, but we went right on making it unlivable even back when there was still time to save it, in spite of the fact that we knew better. The people still on Earth may last another fifty, or another five hundred, years; but they're headed for extinction eventually by processes our great-grandparents instigated. In short, as we all know, humanity on Earth is under a death sentence. And a race under death sentence could have some pretty twisted, and powerful, subconscious drives in its individuals; even in individuals with psychic talents building something like the Pritcher Mass."

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Marti stopped speaking; and sat staring at Chaz. Chaz waited, and when the other still sat silent, spoke up himself.

"You want me to say something to that?" he asked.

"I do," replied Marti.

"All right," said Chaz. "Even if what you say is true, I don't see how it matters a damn. The Mass is the only thing we've come up with. We're going to build it anyway. So why worry about it? Since we've got no choice but to plug ahead and build it anyway, let's get on with that, and not worry about the details."

"All right," said Marti. "But what if the subconscious details in one worker's mind can mess us all up? What if something like that keeps the Mass from coming out the way it should, or working when it's done?"

"Is there any real evidence that could happen?" Chaz asked.

"Some," said Marti, dryly. "We've had some odd reactions here and there among the workers themselves. You may run across some in yourself in the next minutes—or the next few months, so I won't describe them to you. The fact remains, as I kept trying to impress on you, that we really don't know what we're creating; and in any case we have no experience in this type of psychic creation. All we can do, as you say, is keep on building. But we can take one precaution."

Chaz lifted his eyebrows questioningly.

"We can try to get the greatest possible concentration by our workers on the conscious aim we have for the Mass," Marti said. "That's why the legend was over the air lock when you came in. That's why I'm talking to you now about this. Whatever memories or associations you have in your mind about Earth, forget them. Now, put them out of your mind in every way you can. If they crop up unexpectedly, cut them down utterly and quickly. Concentrate on the Mass, on this place here, on your co-workers and on the world we hope to find. Forget Earth and everyone on it. They're already dead as far as you're concerned. You may not be one of those who'll emigrate to the new world when we find it—in fact the odds are against any of us here being that lucky—but you're never going back to Earth again. We won't even send your body back, if you die. Keep that in mind, and meditate on it."

Meditate . . . *"Think'st thou my name, but once thou art there . . ."* The ghost of a song-fragment sounded unbidden in the back of Chaz' mind. Eileen . . .

Marti was standing up and extending his hand. Chaz rose and shook hands with the Director again.

"All right," said Marti. "Jai will get you started. Good luck."

"Thanks," said Chaz.

He followed Jai out the door. They passed through the outer office where Ethrya was still reciting numbers and directions into her commu-

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nications equipment. They left and took an elevator tube up.

"Want to see your quarters now?" Jai asked, as they floated upward on the elevator disk. "Or would you rather take a look at the Mass, first?"

"The Mass, of course—" Chaz stared at the slim man. "You mean I can go to it right away, like this?"

"That's right," Jai smiled. "For that matter, you could try to go to work right away, if you wanted to. But I'd advise against it. It's better to have some experience of what it feels like up there on top, before you try doing anything about it."

"Go to work?" Chaz decided that the other man was serious. "How could I go to work? I don't even know what I'm supposed to do, much less how to do it."

"Well," said Jai, as the various levels slipped by outside the transparent tube of the elevator shaft, "those are things no one can help you with. You're going to have to work them out for yourself. You see, they're different for everyone who works on the Mass. Everyone has a different experience up there; and each person has to find out how to work with it in his own way. As Leb said, this is creative work, like painting, composing or writing. No one can teach you how to do it."

"How do I learn, then?"

"You fumble around until you teach yourself, somehow." Jai shrugged. "You might just possibly learn how the minute you set foot on the deck. But if you're still trying three months from now that'll be closer to the average experience."

"There must be something you can tell me," Chaz said. The unusual nervous excitement he had felt from the moment he had arrived was building inside him to new peaks, as their disk carried them closer and closer to the Mass itself.

Jai shook his head.

"You'll find out how it is, once you've discovered your own way of working with the Mass," he said. "You'll know how you do it, then, but what you know won't be anything you can explain to anyone else. The best tip I can give you is not to push. Relax and let what happens, happen. You can't force yourself to learn, you know. You just have to go along with your own reactions and emotions until you find yourself taking hold instinctively."

Their disk stopped. Above them the tube ended in ceiling. Jai led Chaz from it out into a very large room filled with construction equipment; and the two of them got into airsuits from a rack near a further elevator.

Suited, they took the further elevator up through the ceiling overhead. Their ride ended in a small windowless building with an air lock.

"Brace yourself," said Jai to Chaz over the suit phones; and led the way out of the air lock.

Chaz was unclear as to how he might have been supposed to brace himself, but it turned out that this

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did not matter. No matter how he might have tried to prepare himself for what he encountered on the outside, airless deck, he realized later, it would not have helped.

He stepped into a great metal plain roofed with a dome of brilliant stars seemingly upheld by the faintly lighted, gleaming pillars of the metal masts. It was as he had seen it pictured in books. But the ghostly shape of a great construction crane was not superimposed on it. Instead, his imagination saw the elevator cages on the masts and the cars on the metal cables as part of his favorite image of seed crystals on threads immersed in a nutrient solution. For a moment, almost, he convinced himself he saw the Mass itself, like a great, red ferrocyanide crystal, growing in the midst of all this.

"This way," Jai's voice was saying in his earphones; and Jai's grip on his airsuited arm was leading him to the base of the nearest mast, into a metal elevator cage there barely big enough to hold them both at the same time.

They entered the cage. Jai's gloved hands touched a bank of controls, and the cage began to slide swiftly and silently up the mast. As the deck dropped away beneath them, the excitement in Chaz, the perception of an additional dimension, shot up toward unbearability. All at once it seemed they were out of sight of the deck, high among the stars and the masts, with the softly-lit silver cables looping between them; and without warning the whole impact of the Mass came crashing in upon Chaz at once.

It poured over and through him like a tidal flood. Suddenly, the whole universe seemed to touch him at once; and he was swept away and drowning in a depthless sadness, a sadness so deep he would not have believed it was possible. It cascaded over him like the silent but deafening music of some great, inconceivable orchestra, each note setting up a sympathetic vibration in every cell of his body.

Consciousness began to leave him under the emotional assault. He was vaguely aware of slumping, of being caught by Jai and upheld as the other man reached out with one hand to slap the control panel of the cage. They reversed their motion, rocking back down the mast. But the silent orchestra pursued them, thundering all about and through Chaz, shredding his feelings with great, voiceless chords.

An unbearable sadness for all of mankind overwhelmed him—agony for all its bright rise, its foolish errors that had lead to its present failure, and its stumbling, falling, plunging down now toward extinction . . .

Sorrow racked him—for Earth, for his people, for everything he had known and loved.

Eileen . . . Eileen Mortvain . . .

. . . And the great silent orchestra picked up the name, roaring into the melody that went with the words he was remembering: ". . . *Think'st*

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thou my name, but once thou art there . . ."

"Eileen," he muttered, upheld by Jai, "Eileen . . ."

"*Chaz?*" Out of the orchestra sound, out of the Mass, the unimaginable dimension of the universe he had just discovered, and the sorrow and tragedy of the murdered Earth, he heard her voice calling.

"*. . . Chaz? Are you there? Can you hear me? Chaz . . .?*"

VIII

He opened his eyes, wondering where he was. Then he recognized the white-paneled ceiling three meters above him as the ceiling of the bedroom in the spacious quarters that had been assigned him at the Mass. It had been five days now since his arrival and he was not yet accustomed to having three large, high-ceilinged rooms all to himself.

He became conscious, almost in the same moment as that in which he identified the ceiling, of an additional weight sharing the mattress on which he lay. Out here on the Mass, waterbeds were impractical; and the spring mattresses carried signals once the sleeper got used to them. He turned his head and saw Ethrya perched on the edge of his bed.

She was smiling down at him. It had not occurred to him, here on the Mass, to lock his apartment door, so that there was no mystery about how she could be here. Why, was something else again.

"You're awake at last," she said.

"What's up?" he asked.

"I'm about to go out on the Mass on one of my own work shifts there," she answered. "Leb suggested you might want to go along with me. Sometimes it helps someone new if they spend a shift outside with another person who's already found out how to work with the Mass."

"Oh," he said.

She sat on the edge of the bed level with his right hip as he lay on his back, and she was only inches from him. Since that first moment in which he had heard Eileen's voice out on the Mass, he had not been able to achieve any contact with Eileen again; but she had been in his mind constantly. Nonetheless—for all of Eileen—to come up out of drowsy sleep and find a startlingly beautiful small woman close beside him was to experience an unavoidable, instinctive response.

Even seen this close up, Ethrya's beauty was flawless. She wore coveralls as just about everyone did, on the Mass. But those she was wearing at the moment were white, and they fitted her very well. The somewhat stiff material pressed close to her at points, but stood away from her at others, with a faintly starched look—so that looking at her it was easy to imagine her body moving inside the clothing. The coveralls were open at the throat and above the collar her black hair set off the ivory of her

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skin, giving her face a cameo look. There was a faint, clean smell to her.

"Were you married?" she asked Chaz, now.

He shook his head, watching her.

"Oh?" she said. "I wondered. Jai said you spoke the name of some woman that first day when you collapsed, up top. Who was it, if it wasn't a wife?"

Instinctively, through remnants of sleep that still fogged his mind, his early years of experience at defending himself among his aunt and cousins shouted a warning. Without pausing to search out the reasons for it, he lied immediately, smoothly, and convincingly.

"My aunt," he said. "She raised me after my father died. My mother was already dead."

She stared down into his face for a moment.

"Well," she said, "an aunt. That dossier Leb got on you said something about you being a loner. But I didn't think it was that serious."

She slipped off the bed and stood up. There was no doubt from the way she did it that she was physically taking herself away from him. And yet, she was still within a long arm's reach. Chaz had a sudden strong impulse to reach out and haul her back; and only the same instinct that had spoken earlier—this time, however, telling him that doing so would be to do exactly what she wanted from him—stopped him.

Instead, he lay there and looked at her.

"Anybody entitled to read that dossier of mine, are they?" he asked.

"Of course not," she said. "Only Leb. But I work in the office part of the time. I thought I'd take a look." She looked down at him for a second, smiling faintly. "How about it? Want to meet me in the dining area in about twenty minutes, and we'll go out on the Mass together?"

"Fine," he said. "Thanks."

"Don't mention it."

She turned and walked out. She managed to make a work of art even out of that.

Left alone, Chaz levered himself out of bed, showered—a cold shower—and dressed. Wearing gray coveralls, he took the elevator down to the dining area on the third level. Ethrya was waiting for him at one of the small tables.

"Better eat something, if you haven't in the last few hours, before we go up," she said.

"Breakfast," he agreed, sitting down. "How about you?"

"I had lunch an hour ago," Ethrya answered. Sleeping and eating and working schedules were highly individual on the Mass. "I'll just sit here and keep you company."

He got his tray of food from the dispenser and dug into it. Ethrya sat chatting about work on the Mass. Upstairs here, in public, there were none of the earlier signals of sex wafting from her. She was cheerful, brisk and impersonal—and the con-

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trast with the way she had appeared down in his bedroom made her more enticing than ever. Chaz concentrated on being just as friendly and brisk.

"You aren't going to be able to work with the Mass," she said, "until you've become able to sense its pattern. It does have a pattern, you know. The fact that no two of the workers describe it the same way makes no difference. The pattern's there, and once you can feel it, you'll be ready to start figuring out what needs to be added to it to make it whole. Once you fully conceive of an addition you'll find it's been added to the Mass—not only in the pattern as you see it, but in the pattern of everyone else who's working on it."

Chaz thought of his own image of a nutrient solution with a great red crystal growing in it. He swallowed a mouthful of omelet.

"All subjective, then?" he asked.

"Very subjective," she said.

He managed another mouthful, while mentally debating something he wanted to ask her. He decided to ask it.

"How do you see the Mass?" he asked.

"Like an enormous bear," she answered promptly. "A friendly bear—white, like a polar bear. He's sitting up the way bears do. Maybe you've seen them do it in zoos. They sit with their back up straight and their hind legs straight out before them. He sits like that among the stars, half as big as the universe; and he stretches out one foreleg straight from the shoulder, pointing at whatever I want. All I have to do is walk out along that foreleg to get to anyplace this side of infinity."

Chaz watched her as she talked.

"Have you?" he asked.

"I came close, once," she answered. "There're a number of us who've had glimpses of the kind of world we're looking for. The trouble is, my bear isn't finished, yet; and until he's finished, he isn't strong enough to keep that foreleg held out straight while I locate the world he's helped me get to. Or, at least, that's the shape the problem takes for me, when I work upstairs."

"A bear," he said, finishing up the omelet, "that's strange. I thought everyone would think of the Mass as something mechanical."

"A number of the workers see it as something alive," Ethrya said. "Most of the women here do—what there are of them."

He glanced at her, curiously.

"You sound a little old-fashioned," he said. "I thought all that about equality got settled in the last century."

"Look around you," she said. "The men outnumber us five to one up here."

"Maybe that's the way the talent for chain-perception distributes itself?"

"You know better. The old system still operates. There're plenty of women with the talent to work

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here," Ethrya's dark eyes glittered, "but they've had the guts choked out of them. They'd rather stay where they are and play their little witch-games—even if Earth is a dead end."

Chaz carefully lifted his coffee cup and drank from it without looking at her, and carefully put the cup down. Then he looked at her. Her face was perfectly pleasant and serene.

"You'd know more about it than I would," he said.

"I would indeed," she said cheerfully. "Now, are you ready for the Mass?"

He nodded. They got up, left the dining area, and took the elevator to the top level. Ten minutes later they were out on the deck in their airsuits, walking clumsily side by side toward a cage at the foot of one of the masts.

"Keep your suit phone open on my circuit," her voice said in his earphones. "That way I'll be able to hear anything you say. Usually, if people begin to hallucinate here on the Mass, they talk or make some kind of sound that gives it away."

"Hallucinate?" he echoed, as they fitted themselves into the cage and began to rise up the mast. "Is that supposed to be what happened to me the first day?"

"Of course," she said. "What else?"

"I don't know," he said. "I just didn't think of it as a hallucination."

"Oh, yes," she said. "It happens all the time, even after you've learned how to work up top. You were just lucky it wasn't a bad one—like the universe going all twisted and crazy. In a strict sense, the Mass isn't even real, you know. Any characteristics it has are things our minds give it. It's all subjective around here. You start getting hallucinations that are really bad and Leb'll have to take you off the work up here."

"I see," he answered.

"Don't worry about it. How do you feel now?"

"I don't feel anything," he said. It was true. Since that first day he had been back up on the Mass a half-dozen times, and each time there had been no more to it than clumping around in an airsuit and riding mast elevator cages and cable cars through airless space.

"If you start to feel anything, let me know," she told him. "Actually, there're two things here. The Mass itself and the force of the Mass. So, you do want to feel something—the Mass-force pushing against you. But you want to control that push, meter it down to a force you can handle, so it doesn't overwhelm you the way it did the first time."

Their cage stopped at a cable. They got out and transferred to a cable car, which began to slide out along the cable into a void in which they seemed all but surrounded by stars.

"What would happen if you learned how to manage the full force without metering it down to something smaller?" he asked.

"You couldn't take it," her voice

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answered within his helmet. "We've had a few people who couldn't learn how to meter it down and they all collapsed, eventually. That's when the hallucinations start getting bad, when the full flow can't be controlled. You can blow your mind out, then."

Chaz stowed that information away in his mental attic, together with a perceptible grain of salt. He would discover his own truths about the Mass, he decided, for himself and at first hand.

"The thing is," the purely human voice of Ethrya sounded tiny and unnatural, coming over the earphones of Chaz' suit, "to take it as gently as possible. Just sit back and let the force of the Mass seep into you, if that's the word. How do you feel now?"

"Fine," said Chaz.

"Good." She stopped the cage in mid-cable. "I'm ready to go to work now. If you pick up any feeling from me, or from the Mass-force, speak

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up. Maybe I can help you with it—or maybe not. But check anyway."

"All right," Chaz said.

He sat back in his airsuit. Silence fell. Beside him, Ethrya was equally silent. He wondered if she was already walking out along the outstretched forelimb of her enormous bear. How long would it take her, in her mind, to walk the light-years of distance from his shoulder to wherever she believed he was pointing?

Chaz tried to put his mind on the Mass; but the female presence of Ethrya alongside him interfered, in spite of the double wall of airsuiting between them. His mind went back to Eileen. It had been no hallucination, that voice of hers he had heard, on his first day here. He might be open to argument on other points about the Mass; but on that one he had no doubt. He and Eileen had been in contact for at least a few seconds, thanks to the Mass; and what had been done once could be done again.

. . . If, that was, he could only get once more into touch with the Mass itself. A small cold fear stirred inside him. The possibility of hallucinations did not worry him; but Jai had talked of three months or more of effort before Chaz might learn to work with the Mass. How much time would they actually be willing to give to learn? Somewhere . . . he began to search through the attic of his memory . . . he had read something about those who after six months or so could not learn to work. They were not sent back to Earth. Like those Ethrya had been talking about, who could not stand up emotionally or mentally to contact with the Mass, they were kept on as administrative personnel. But administrative personnel were never allowed up here on the deck.

The earphones of his suit spoke suddenly. But it was not a call for him. It was Lebdell Marti, speaking to Ethrya—he heard the call only because of the open channel between the phones of his suit and hers.

"Ethrya? This is Leb. Are you up on the Mass?"

"Hello?" She answered immediately, almost as if she had been waiting for the call, instead of out somewhere on the forelimb of her bear. "What is it, Leb? I'm on the Mass with Chaz Sant. I thought it might help him if I took him out in partnership for a try."

Marti did not speak for a long second.

"I see," he said then. "Well, I'm sorry to interrupt; but some of those supplies from the ship last week must have gotten stored in the wrong place. Either that, or they weren't sent. Can you break off and come down to the office to help me find out which?"

"I'll be right down." There was a faint click in the earphones as Marti broke contact. The helmet of Ethrya's airsuit turned toward Chaz in the cable car. "Sorry, Chaz. You're going in, too?"

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She had already touched the controls of the cable car and it was gliding along the silver catenary curve of the cable toward the nearest mast.

"No," said Chaz. "As long as I'm suited up anyway, I think I'll stay up here a bit and go on trying."

"Whatever you want." The car touched the mast and stopped. She got out. "Better keep your phones open on the general channel, though. If you should have another hallucination, you want somebody to hear you and get you down."

"Right," he said, and watched her go. The cage she entered slid down the mast below him to the deck and he saw her shrunken, foreshortened, airsuited figure go across the deck to the nearest elevator housing.

Left alone, high on the mast, he tongued his phone over to the general channel. He heard the hum of its particular carrier wave tone, and felt a sudden, gentle coolness against the skin inside his right elbow. For a second, he was merely puzzled—and then instinct hit the panic button.

He flipped his phone off the general channel with his tongue, but the damage was already done. Something had already started to take hold of his mind—something that was not the Mass, but a thing sick and chemical.

"Help!" he thought, and for all he knew, shouted inside his airsuit helmet. He reached out for aid in all directions—to the attic of his memory, to his own talent, to the Mass itself . . . "Eileen! Eileen, help me! They've . . ."

His mind and voice stumbled at the enormity of what someone had done to him. He felt his consciousness begin to twist into nightmare.

"Chaz! Is it you? Are you there?"

"Eileen," he mumbled. "I've been drugged. I'm up on the Mass and they've drugged me . . ."

"Oh, Chaz! Hold on. Hold on to contact with me. This time I won't lose you—"

"No use," he muttered. She was still talking to him; but her voice was becoming fainter as the nightmare crowded in. "Starting to drift. Need help. Need Mass . . ."

He thought longingly, with the little spark of sanity that was still in him, of the great silent symphony he had heard the first time he had been out here. Nothing could twist that rush of unconquerable majesty. Only, he could not find it now. He could not feel it when he needed it . . .

But he could. His feeling for Eileen had triggered his demand for contact with it. After that the thrust of his desperation was sufficient. Far off through the gibbering craziness that had surrounded him and was carrying him away, he heard its first notes; the music of the Mass-force. It was coming. And there was nothing that could stand before it and bar its way.

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IX

It came like an iron-shod giant striding through a nest of snakes. It came like all the winds of all the stars blowing at once upon the smog and fog and illness of little Earth. It came like the turning wheel of the universe itself, descending upon the eggshell of a merely man-made prison.

The voice of the Mass, unbarred, unmetered, roared through Chaz' body and mind as it had roared once before; and the effect of the drug was swallowed, quenched and drowned utterly. Like a leaf in a tornado—but a clean leaf, now—Chaz was snatched up and whirled away.

For a while he let the Mass-force fling him where it would. But, gradually the memory of Eileen speaking to him returned, along with the desire and need to hear her speak again; and for the first time he began to try to ride the tornadic force that had saved him.

It was like being an eagle whose wings had been bound from birth, and who was only now learning at last to soar, in the heart of a storm. There was no teacher but instinct; no guide but the waking of dormant reflexes; but slowly these two took over. It was what the faculty of chain-perception had been meant to be all along—but what Chaz had not really understood it to mean until now. The true definition of the choosing by which useless and wrong actions were discarded, and the useful and true caught, to be linked together into a cable reaching to a desired conclusion.

So, finally, he came to control the force of the Mass—or at least, close enough to control so that he was able to form his own image of it. That image was of a massive dark mountain of whirling wind, emerging from the great crystal he imagined growing in the nutrient solution of the Mass itself. He had ridden the various currents of that wind, now safely up from its base where he might have been blown to tatters, or whirled away forever; and he still had a far way to climb to its peak. But the distance yet to go did not matter. He was on the way; and by making use of as much of the Mass-force as he already controlled, he could reach Eileen easily.

He rode the force, reaching out with his concern for her.

"Eileen?" he called.

"You're back! Chaz, are you all right?"

He laughed with the exultation of riding the Mass-force.

"I am now," he said. "I just got a good grip on the horse I'm riding, here. It almost bucked me off at first."

"What? I don't understand you."

"Didn't you ever read those old western—never mind," he said. "It doesn't matter. What matters is, we're back in touch."

"But what happened, Chaz? You were in trouble, weren't you?"

"Somebody rigged the airsuit I'm

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wearing out on the Mass. It gave me a shot of some hallucinogen. But the Mass helped me counteract it. I'm fine. What about you? Where are you, Eileen?"

"In the Citadel. But I'm all right too. They're even going to let me go, soon, they say."

"*In* the Citadel? You mean it's a place? I thought it was an organization."

"It's both. An organization first, and a place second, even if the place is—well, never mind that, now. I've got something I want to tell you, Chaz—"

"But just a minute. What did you start to say just now about the Citadel, the place? Where is it, anyway? What's it like? Finish what you started to tell me about it."

"I meant—even if it is something like a real citadel. I mean, a fortress. The name of it is the Embry Towers, and it looks like any big condominium-office building from the outside. Inside, it's different. And it's somewhere in the Chicago area, I think."

"Where's Tillicum? Is the wolverine there with you? Have they got you locked up, or what?"

"No, Tillicum's not here," her voice answered. *"I could have him if I wanted him, but I don't. I've given him to another witch in my coven for a while. I said they were going to let me go. Now, Chaz, listen. Let me talk. This is important."*

"You're what's important," he said. "Anything else comes second—"

"No, I mean it. I want you to know about me and the Citadel. Look, I told you the truth. I don't belong to it. But all the members of our coven did deal with it. The Citadel could help us stay hidden and be left alone by other people. We were always used to dealing with some kind of organization—well, never mind that. The thing is, the Citadel made a deal with me to do something for them. I was to move into your condominium, get to meet you, and try to block your talent with mine—put a hex on it, in the old terms—when you tried to use it to pass the test for work on the Mass."

"You?" he said.

"Yes—I'm sorry, Chaz. I'm so sorry; but I didn't know anything about you, then. It wasn't until I arranged to meet you that night in the party rooms, that I began to understand you, and what you believed in. You weren't drunk that night, really. I made you drunk—and not even with craft, but with drugs. I wanted you to talk, because the more you told me, the more hold I'd have on your talent. Dear Chaz, you shouldn't even tell a witch your name, don't you know that? Much less tell her everything you believe in."

"It didn't do any harm," Chaz said. "I'm here on the Mass, anyway."

"But I meant harm—then," she answered. *"I wasn't any different from the people in the Citadel; I was just as deadly toward you as that sick, exiled man the Citadel must have bribed to blow up your train when I couldn't*

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stop you. But never mind that. What I want you to know is that you didn't get away from the Citadel just because you were shipped out to the Mass. There're Citadel people there, too."

"After what just happened," he said grimly, "you don't have to tell me. Who are they, out here? And what is the Citadel, anyway? Everybody talks about it as if it was a name and nothing else."

"That's all it is," she said. *"A name—for the few people on top of things, with a lot of power and a lot of connections. Does it really even matter who they are? All through the centuries there's always been some like them, who took advantage of other people to get what they wanted for themselves. The Gray Man's the only one I know, and he can't be too important. But there are others out there on the Mass."*

"What do they want from us, anyway?" he said. "What do they want from me? I've never bothered them."

"Except by wanting to work on the Mass."

"Lots of people want to work on the Mass. What happened? Did I take a job they wanted for one of their own people?"

"No," she said, *"but you're different. You're dangerous to them. I can't explain too well why, Chaz. But the Citadel has people with paranormal talents, and it's got computers. It can put the two together to get a rough forecast of what any person might do to its plans—particularly any person under captive conditions, the way you all are, out there on the Mass. They run a check automatically on anyone who tries to qualify for work on the Mass."*

"Why? What's the Mass to them?" he demanded. "There's no market for illegal goods and services here, is there?"

"Of course not. But they want the Mass for themselves—what did you expect? They want to be the people, or among the people, who get a chance to emigrate to a clean world, if the Mass can find one."

"And they think I'm going to stop them? What're they afraid of?" A wild thought struck him suddenly. "Eileen, do I have some special paranormal talent I don't know anything about? Or more talent than anyone else—something like that?"

"Dear Chaz," she said, *"you do have talent; but nothing like that. If my talent hadn't been greater than yours, for instance, I couldn't have blocked you on those early tests you took. It isn't paranormal abilities that makes you dangerous to them. It's the way the linked events work in a probability chain—the very thing chain-perception discovers. The alternatives anyone perceives are determined by his own way of looking at the universe—his own attitudes. For some reason, your attitudes are different from other people's. All wrong—or all right—or something. From the Citadel's standpoint they could be all wrong; and the Citadel didn't want to take the chance."*

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"The man you call the Gray Man was my examiner on the Pritcher Mass tests," Chaz said. "A man named Alexander Waka. He gave me a special test and made it possible for me to be here."

There was a second of no response from her.

"Chaz?" she said then. *"Is that right? It doesn't make sense."*

"It's a fact," he said grimly, "square that with the fact that, according to you, I've got no unusual talents."

"Oh, Chaz!" There was a little pause, perhaps half a breath of pause. *"How can I get the point over to you? It's you I'm worried about. I want you to take care of yourself and not let anyone hurt you. You've got to realize how it is. No, you don't have any unusual talents. If I hadn't—if I felt differently about you, I could have used my ability to make you do what I wanted almost without thinking about it."*

"Thanks," he said.

"But you've got to face the truth! Talents are something else. Chaz, I want you to live, and the Citadel would just as soon you didn't—unless you can prove useful to them. That's the only reason they're holding off. You just might turn out to be useful. But the odds are against you. Can you understand that?"

"That I can believe," he said, deeply, remembering back through the many schools, the different places, the childhood in his aunt's house—even when his uncle had been alive it had been his aunt's house. "All right, tell me what can help me, since there's nothing special about me."

"All right," she said. *"Chaz, to me you're more special than anyone I've ever known; but we have to face facts. You're talented, but there are more talented men and women, particularly on the Mass. You're bright, but there are brighter people. Everything you've got, other people have, and more. There's just one thing. You're unique. Oh, everybody's unique, but they don't operate on the basis of their uniqueness. They don't really march to the tune of their own distant drummer and stand ready to deal with the whole universe single-handedly if the universe doesn't like it."*

"I don't know if I understand you," he said.

"No," she said, *"that's because you're on the inside looking out. But it's what makes you dangerous to the Citadel, as far as the Mass is concerned. The Mass is subjective—it can be used by anyone who can work with it; and you see things differently from anyone else, plus you've got this terrible drive to make things go the way you want."*

"Who said I had this terrible drive?"

"I did. Remember I was the one who sat and listened to you for four hours that night in the game rooms, when you told me everything there was that mattered to you—"

She broke off. Her voice fell silent inside him. The physical sound of a

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call buzzer was ringing in his airsuit helmet—the general call signal. Angrily, he opened the communications channel to his earphones.

". . . Sant? Chaz Sant!" It was the voice of Lebdell Marti. "Can you hear me? Are you all right up there?"

"Fine," said Chaz.

"You were told to keep your phones open on the General Channel, but they weren't when Ethrya checked just now. Are you sure you're all right? You haven't been feeling any different from normal?"

Chaz grinned wolfishly inside his helmet.

"I had a little touch of dizziness just after Ethrya left," he said. "But it only lasted a second. Good news. I've made contact with the Mass. I'm ready to go to work on it."

No answer came for a long second from the phone. Then Marti spoke again.

"You'd better come in now," he said. "Yes, I think you'd better come down. Don't try to do anything with the Mass; just come in. Come right to my office."

"If you say so," said Chaz. "I'll see you in a few minutes."

He cut off communications on his phones again.

"Eileen . . . ?" he said.

But there was no response. Eileen was once again out of contact. It did not matter. He was sure now he could reach her any time he really wanted to do so.

He went down into the platform, desuited and descended to Marti's office. Waiting for him there was not only Marti and Ethrya—but Jai, also. Marti, at least, was in no good humor. He questioned Chaz several times over about exactly what he had experienced after Ethrya left him. Chaz, a veteran of such inquisitions since he had been ten years old, calmly repeated that he had felt a slight dizziness after being left alone by Ethrya; but that this had cleared up immediately and afterwards he had made contact with the Mass. He was factual in his description of what it had been like, once contact had been made; except that he made no mention of his conversation with Eileen.

The interview followed classical lines, according to Chaz' experience. Having failed to make any dent in Chaz' story, Marti fell into a temporary silence, drumming his fingers on his desk top.

"Of course," he said at last, "we've only got your word for it that you made Mass contact. That, in itself, could be a hallucination like the hallucination you evidently had the first time you were up there with Jai. Don't you think so, Jai?"

"I suppose," said Jai. The tall man looked, Chaz thought, somewhat uncomfortable.

"In which case, with two hallucinations in a row, we probably shouldn't let you up on the Mass again for fear you might hurt yourself permanently—"

"Wait a minute!" said Chaz.

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Marti broke off, staring at him.

"You may be Director here," said Chaz, grimly. "But maybe you'll tell me if it's normal practice to take a man off the Mass permanently because of a first instance in which you only suspect he hallucinated, and a second instance in which he says he made contact. What did you do when the other workers first came down saying they'd made contact? Did you suggest they'd been hallucinating? Or did you take their word for it? Should I ask around and find out, in case you've forgotten?"

Marti's face went darkly furious. But before he could answer, Ethrya had stopped him with a small hand on his arm.

"We're only trying to protect you, Chaz," she said. "Isn't that right, Jai?"

"That's right," said Jai. "And Chaz, there are reasons other than hallucinations for barring people from the Mass. The Director has to have authority for the good of all the work being done here. On the other hand . . ." he looked at Marti, appealingly.

Marti had himself back under control.

"All right," he said dryly. "If you feel that strongly, Chaz, you can have another try at the Mass. But one more instance of suspected hallucination and you're off it permanently."

"Good." Chaz, sensing a psychological victory, got to his feet quickly. "I'm ready to go back up right now."

"No," said Marti, definitely. "We'll want at least to give you a thorough checkup and keep you under medical observation for a few days. You can understand that, I hope. You'd better report to the Medical Section now." He reached out and punched on the desk phone before him. "I'll let them know you're on your way down."

In actuality, it was eight days, as those in the platform counted them, before Chaz was able to get back up on the Mass. The Medical Section held on to him for tests and observations for three days, then bucked the matter back up to Marti, with a report they would not let Chaz see.

". . . But I don't see why you should worry very much," said the physician in charge of Chaz' case, unofficially.

Marti, however, decided to take time to consider the report. He considered through a fourth and fifth day of idleness for Chaz. The sixth day found Chaz camping in Marti's outer office, without success. The seventh day, Chaz went to find Jai.

"I came out here to work," Chaz told the tall Assistant Director, bluntly. "I'm able to work. He knows it. I don't care how you put it to him, but say I know I'm getting different handling than anyone else on the Mass who's qualified to work is getting; and if I'm not cleared to go upstairs tomorrow, I'm going to start finding ways to fight for my rights.

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And take my word for it—I'm good at finding ways to fight when I have to."

"Chaz . . ." protested Jai, softly, "that's the wrong attitude. Leb has to think of the good of the Mass and the people working here as a whole—"

He broke off, looking away from Chaz' eyes, which had remained unmovingly on those of the Assistant Director all the while.

"All right," said Jai, with a sigh. "I'll talk to Leb."

He went off. The morning of the next day he came to Chaz.

"Leb says there's only one way you can prove you made contact with the Mass," Jai said. "That's by doing some work on it that will show up as an obvious addition to it, in the perceptions of the other workers. Do that, and you'll have proved your case. But he'll only give you one more shot at it. Leb says you can go up and take that shot right now; or you can take as long as you like to get ready before trying it."

"Or, in other words," said Chaz, "I can sit around until self-doubt starts to creep in. No thanks. I'll go up now. Want to come along with me and take a look at my airsuit before I put it on, to make sure it's all right?"

Jai stared at him.

"Why wouldn't your airsuit be all right?"

"I have no idea," said Chaz, blandly. "Why don't you have a look at it anyway?"

Jai stared at him a second longer, then nodded with sudden vigor.

"All right," he said. "I'll do that. In fact, I'll go out on the Mass with you, unless you have some objection."

"No objection. Let's go."

They went upstairs, where Jai actually did examine Chaz' airsuit carefully before they dressed and went out. They went up a nearby mast and changed to a cable car. In mid-cable, Chaz stopped the car.

"Tell me," he said to Jai. "How do you feel about my being allowed to work on the Mass?"

"How do I feel?" Jai stared at him through the faceplate of his airsuit helmet.

The question hung in both their minds. There was a moment of pause—and Chaz moved into that moment, expanding it by opening his mind to admit the Mass-force.

The Mass-force entered. The dark mountain of hurricanes swirled him up and away, even as he saw time slow down and stop for Jai by comparison. Within himself, Chaz chuckled, reaching into his memory attic. What was it Puck had said in "A Midsummer Night's Dream"? ". . . *I'll put a girdle round the Earth in forty minutes . . .*"

He would put a collar and a leash on the Mass in forty seconds—between his question and Jai's answer—unless he had very much mistaken the abilities of the force he had learned to ride the last time he was up here. If he was mistaken, of

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course, the whole thing could backfire. But this was the sort of chance he liked to take.

The Mass swung him up into it. In a minisecond, he was soaring again, rather than being carried off helplessly. He grinned to himself. The workers on the Mass wanted contact with a different world, did they? Well, perhaps he knew of one world out there he could contact that would surprise them all.

He put into the Mass his memory of the cartoon world with towers leaning at crazy angles, all surfaces covered with a thin sheet of flowing water, on which rode beings like great snails, and where an alien like a tall praying mantis spoke to him. He pointed the Mass in search of such a world–

And he was there. It was just as he remembered it. Except that the water was ice now, and the air was bitterly cold. He shivered, watching; but the Snails skated as serenely on the frozen surfaces as they had on the liquid, and the Mantis, unperturbed by, or apparently indifferent to the cold, gazed calmly down at him.

"So you really look like this?" said Chaz. "And your world looks the way I dreamed it?"

"No. It looks the way you picture it," said the Mantis. "And we look the way you imagine us. I talk with the words you give me. You're our translator."

"Am I?" said Chaz. "Well, I'm going to translate everything about you into the Mass, right now."

"No, you won't," said the Mantis.

"No?" Chaz stared up at him.

"You seem to believe that either we'll be of some help to you," said the Mantis, "or that you'll be able to use us to help yourself. Both ideas are incorrect."

"What's correct, then?" he asked.

"That we are real, if different from the way you are this moment imagining us," said the Mantis. "More than that, you are required to discover for yourself."

"I see," said Chaz; and abruptly, he thought he did. "You're saying we aren't wanted on or in touch with your world? The doors are closed?"

"All doors are closed to you," said the Mantis. "I only answer you now because of our obligation to answer all who come asking."

"That so?" said Chaz. "Who else on the Mass have you told about that?"

"No one but yourself," said the Mantis. "You were the only one who came looking and found us."

"But I found you back before I came to the Mass," Chaz demanded. "I dreamed about you first when I was back on Earth with no Mass to help me."

"The Mass is on Earth," said the Mantis.

"The Mass on . . . ?" Chaz' mind whirled suddenly. The words of the Mantis seemed suddenly to open up echoing corridors of possibilities. Abruptly, he stared away down bottomless canyons of linked causes and effects, swooping off toward a con-

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clusion so improbably distant that for all its vast importance, it was beyond perception. The winds of the Mass-force shrieked suddenly in his ears like a chorus of billions of human voices, crying all at once. And among those who cried, he heard one in particular . . .

He left the Mantis and the cartoon world with its skating Snails; and he went towards Earth, into darkness, calling.

"Eileen? Eileen, are you there?"

"Chaz . . ."

"Eileen? Eileen, answer me. Where are you, someplace in the Citadel?"

"No." The answer was slower in coming than usual. *"I'm out now. They've let me go"*

"Good!" he said. "You're all right, then. Are you back in our old condominium? When did you get out—what're you doing now?"

"Chaz," she said. *"Listen. I've got something to talk to you about—"*

"Go ahead," he told her.

"The Citadel told me some things before they let me go. Most of it isn't important. But there's one thing. You know, the trips to the Mass are all one-way. You won't be coming back—"

"No. But you can qualify yourself for the Mass," he said. "I've been thinking about that. You've already got the talent; and I can help you. With the two of us out here—"

"No," she interrupted him. *"You're wrong. I'm not able to qualify and I wouldn't if I could. That's something I didn't tell you about those of us who used to call ourselves witches. The Earth is special to us. We'd never leave her. We'll all die here first. So you see, I can't go; and you'll never be coming back. The Citadel reminded me about that; and I'm glad they did. Because there's no use you and I both going on making ourselves unhappy. The sooner I settle back into the way things used to be with me, the better; and the sooner you settle down out there and forget me, the better."*

He stared into darkness, hearing the words but absolutely refusing to believe them.

"Eileen?" he said. "What did they do to you? What is this crazy nonsense you're talking? I've never turned back from anything in my life once I started after it. Do you think I'd turn back from you—of all things?"

"Chaz, listen to me! You've got a chance there. They told me that much. I mean, more than just a chance to fit in on the Mass. If you can be useful to them, you can be one of those who go on to the new world, when it's found. It's not just their promise—that wouldn't mean anything. But they pointed out to me that if you were worthwhile, they'd need you on the new world. And that's true. Only you have to forget me, just as I'm going to forget you—"

He could see nothing but the darkness. He could read nothing in her voice. But a furious suspicion was building to a certainty in his mind.

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"Eileen!" he snapped at her, suddenly. "You're crying aren't you? Why? Why are you crying? What's wrong? *Where are you?"*

Stiff with anger, he reached back into the Mass-force for strength, found it, and ripped at the darkness that hid her from him. The obscurity dissolved like dark mist, and he saw her. She was stumbling along a rough, grassy hillside with tears streaking her face. There was a fish-belly-white sky above her and a wind was plucking at her green jumpsuit and whipping her hair about her shoulders. All around her, the land was without buildings or any sign of life, including Tillicum. He thought he could even smell the raw, chill, haze-flavored air.

"You're *outside!*" he exploded at her. "Why didn't you tell me? Was that what they meant by saying they'd turn you loose? Why didn't you say they'd put you out of the sterile areas to die of the Rot?"

X

She stopped, lifting her head and looking around her, bewildered.

"Chaz?" she said, *"Chaz, you aren't here, are you? What do you mean, I'm outside?"*

"I can see you."

"You can . . . see me?"

She stared around her. Her face was flushed; and her eyes were unnaturally bright. For a moment, she tried with one hand to capture her flying hair and hold it still against the back of her neck, but failed. Her hand fell limply to her side.

"That's right," he said. "And now I know what they've done to you, do you think I'm going to leave you outside to die? I'll come back there—"

"Leave me alone!" she cried. *"Just go away and leave me alone! I don't want you back here. I don't want you at all. I just want you to stay where you are and forget about me—is that too much to ask? I don't want you—I don't need you!"*

"What about the Rot?" he demanded. "If you're outside—"

"I'm not afraid of the Rot!" she exploded furiously. *"Didn't I tell you when you first brought that unsterilized piece of stone in that it wouldn't infect me? Witches are immune to the Rot!"*

"No one's immune to the Rot—"

"Witches are. I was—until you made me love you and I lost my talents. Now, if you'll just go away and leave me alone, I can stop loving you and be able to use my craft again. I'll be all right, then; and that's all I want. Why can't I make you understand that? That's all I want—you to go away and stay away. Go away." She screamed it at him. *"GO AWAY!"*

The violence of her feelings exploded in his mind, leaving him numb. The darkness flowed back; and his sight of her was lost, her voice was silent. He was alone again, emotionally slashed and stunned.

Like a man slowly waking up, he came back to awareness of the cable

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car on the Mass. Jai was still sitting opposite him and there was enough reflected light around from the cables and the masts for him to see the other's face within his airsuit helmet. Jai's features were slowly molding themselves into a frown of something like decision, as they stared at Chaz. Plainly, the speedup Chaz had initiated was still making a difference between his own perceived time and that of the Assistant Director; but that did not mean Jai was unaware of what went on. Chaz stared back grimly.

Eileen had cut him off, shut him out. Once again, as it had been always, all through his life, he had been thrown back on his own.

He could try again. He could make use of the Mass to force contact on Eileen. But what was the point? She was right, of course. He had caused her to lose her ability to use her paranormal talent. It did not matter that he had not done it deliberately; or that her loss was psychological, rather than real. The practical results had been the same. Also, he had been responsible for everything that had happened to her since meeting him—including being exiled now to the unsterile areas, to rot and die.

As far as that went, she was right about his situation. He could stay on the Mass and prove himself too valuable for the Citadel people here to do without. It did not matter that the cartoon world of the Snails and the Mantis was closed to them. If he could fit in here . . . He woke suddenly to a realization of the nonsense he was thinking.

He was forgetting something he had told her about himself; that he had never in his life turned back from anything he had set out to pursue. It was a simple truth, with no particular courage or virtue involved. It was simply the way he was built—no gears for going into reverse. Something in him could never allow him to back off once he had started in a direction; and that same something was not about to let him back off now from Eileen. He had fallen in love with her; and she was one of the things he was going to have, or die trying to get. Eileen, and a cure to the conflict of disgust and pity within him that had driven him to the Mass.

So, there was no choice. His decision was a foregone conclusion, he being the way he was. That being the case, the sooner he rescued Eileen from the outside, the better. He turned his attention back to the cable car and Jai.

A droning noise was coming over the earphones and Jai's lips were slowly moving. The speedup affecting Chaz was evidently still in effect. He had time.

He went back mentally into the Mass, leaving Jai behind. There must be, he thought, a way of using the Mass-force to move him physically from the cable car to Earth. He had considered the chance of mak-

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ing an actual, physical transfer to the cartoon world, back when he had been talking to the Mantis, before the Mantis told him that all doors were closed. If there had been a way to project him physically to the cartoon world—and that sort of projection had been behind the idea of the Mass from its beginning—it ought to be much simpler to project himself merely to his own world and Eileen.

He examined the matter. It would be necessary to set up some kind of logic-chain that would lead to the conclusion he wanted. He considered the situation as it now stood, with him above the platform, Eileen on Earth, the Mass—inspiration sparked.

"Project," he thought, was the wrong word to use. To think of projecting something was to think in terms of the physical universe; and whatever mechanism he would use could not be of the physical universe. In fact, by definition it probably should be at odds with physical reality and physical laws. Suppose, to begin with, he threw out the whole idea of physical movement from place to place.

In that case, perhaps what he wanted to accomplish was not so much a projection of his physical body anywhere, as a conviction within himself about where he was. As if, once he had completely convinced himself that his body was on Earth, rather than here, then by the force of the Mass the conviction could become reality. Physically he would then be subject to the convictions of his mind.

All right, movement was out. Distance and time could therefore be discarded.

Position could be ignored.

Of course! The Mass itself was actually independent of position. In one sense, naturally, it was here above the platform. But in the sense of the purpose for which it was being built, it would have to be capable of also *being* on another world light-years distant—like the cartoon world. If it could be on the cartoon world, why couldn't it be anywhere?

Of course again, it *was* everywhere. Hadn't the Mantis told him that it was back on Earth? The Mantis might have meant more in saying that than was readily perceivable; but nonetheless, the statement by the Mantis had been that the Pritcher Mass *was* on Earth. If the Pritcher Mass was on Earth . . . Chaz hunted for an anchor for his logic-chain, and found it.

Once again, of course. He had contacted the Mantis, the Snails and the cartoon world, when he was back on Earth. Therefore the Mass had to be there, as the Mantis said. That anchored the logic-chain, then. The Mass, beyond dispute, was on Earth. He was in the Mass—therefore he was also on Earth, in principle, since the Mass had no physical limitations on position. The only discrepancy was a matter of conviction—his belief that the platform was surrounding him, rather than the land and sky of

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a hillside on Earth. He need only alter that conviction . . .

He tried. For a moment there was only darkness. Then he saw the hillside, *but Eileen was not on it.* A heavy wave of urgency and fear broke over him, like surf over a man wading out into water where he can swim. He reached to the Mass-force for strength.

And conviction . . . became . . . reality.

He was there.

He stood on the hillside, strangely insulated in his airsuit. Mechanically, he began to strip it off, and was assailed by the iciness of the wind. It had been late fall when he left Earth, and now winter was clearly on its way; although there was as yet no sign of snow—the dirty gray snow that would cover ground and vegetation when the cloud cover, always overhead, opened up with precipitation.

The chill was too strong. Under the airsuit, he had been wearing only the light coveralls of the summer-temperature Mass platform. He stopped removing his airsuit and pulled it back on again, all but the helmet, which he left lying on the ground. Redressed, he felt more comfortable. The airsuit was not built for warmth, and its gray, uninflated, rubbery fabric bunched around him as he moved; but it stopped the wind.

He looked around. The blocking-out Eileen was doing to him still held. He could not locate her by any paranormal means. He looked at the ground; but it held no message for him. He had been born and raised in the sterile areas; and even if he had not he doubted he would have been the sort of wilderness expert who could follow a trail left by someone in open country. That left only the ordinary uses of his mind, as the means to find her.

Eileen, also, would have been born and raised in the sterile areas. Surely she would have been in search of some kind of shelter. Equally as surely, she would have wanted to take advantage of as much protection from the wind as possible while she searched. To the lower side of the downslope at his left and stretching away over further rolling hills to the horizon, the visible ground was clear except for an occasional tree or clump of bushes. To his right, along the crown of the hill, and thickening as it ran ahead, was a belt of fairly good-sized pine and spruce trees. The wind should be less among them. Chaz headed toward the trees in the direction he remembered Eileen had been headed when he had last viewed her.

In spite of the airsuit, in the open he chilled rapidly. However, once he reached the trees the wind was indeed less, and also by that time he had begun to warm himself up with the exercise of walking. He moved just inside the edge of the trees, keeping his eyes open for any sign of more solid shelter.

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A mile or so along, he came upon the remnants of a barbed-wire fence running through the edge of the wood. In this country, where family farms had been the rule, a fence usually meant a farmhouse not too far away. A farmhouse could mean shelter of some sort, unless it had been burned down.

Eileen would almost certainly have followed such a fence. But which way? Chaz mulled it over, guessed that she would have been most likely to go the way that was closest to the direction in which she had already been traveling, and went that way himself. The fence continued through the trees, emerged in a small, open swampy area, where it circled a pond and climbed a small hill. On the other side of the hill there was no house, but something almost as good—a somewhat overgrown but still recognizable asphalt road, which to the right led out of sight over yet another hill, but to the left led to something that seemed almost certain to be a clump of buildings, or even a small town. Chaz took the road to the left.

As he got close to what he had seen up the road to the left, the hope of a small town evaporated. What he finally made out was what looked to have been a roadside filling station, store and garage, with a house and barn sitting closely behind the station. As he got nearer to the clump of buildings, he moved more cautiously. There was no law outside the sterile areas.

He had been traveling in the dry ditch on the right side of the road, instinctively; and the autumn-dried vegetation on either side of him was tall enough to screen him from anyone but an observer concentrating on the ditch with a pair of binoculars. Field grass, coneflower and tansy were mingled along the side of the ditch away from the road; and frequent stalks of milkweed stood stiff and rustling in the wind, their pods split open and emptied at this late stage of the year. Nonetheless, as he came closer to the buildings, he grew more cautious, crouching down so that he could only see the roofs ahead of him above the tops of the vegetation.

He slowed at last to a stop, less than a hundred yards from the rusted and broken shapes of the gasoline pumps he could see through the grass and milkweed stems. He was in something of a quandary. If Eileen had taken shelter in the ruins up ahead, then he wanted to get to her as soon as possible. But if there was somebody else instead of her in the buildings, or if others were holding her captive there, the last thing he wanted to do was to walk boldly up to the place in plain sight.

He turned and left the ditch, crawling on his belly into the grass and weeds of the field to his right. He made a swing of about twenty or thirty meters out into the field and then headed once more toward the house and store, with which he estimated he was now level.

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The airsuit was clumsy for crawling along the ground; and it was little enough compensation that here, down against the earth, the wind bothered him a great deal less, so that it seemed much warmer. In fact, with the effort of crawling, he was soon sweating heavily. His knees and elbows were protected from scrapes by the tough material of the airsuit; but rocks and stumps poked and bruised him, while little, sharp lengths of broken grass and weed managed to get in the open neck of his airsuit and down his collar.

He was working up a good, hot anger at these minor tortures, when a sudden realization checked him and he almost laughed out loud. He had paused to rest a second and catch his breath long enough to swear under it—when it struck him abruptly that, in the face of all common sense, he was enjoying this. The situation might be both dangerous and miserable; but, except for a few moments on the Mass and after the train wreck, he had never felt so alive in his life. It was something to discover.

Having rested enough, he continued, less concerned with his minor discomforts and more alert to the general situation he was in. And it was a good thing he was so; for even at that he nearly blundered into trouble.

If he had not been crawling along with his nose no more than three hand's-breadths above the ground, he would never have noticed the thin, dark transverse line that appeared among the weeds just ahead. As it was he saw it without recognizing what it was until he had crawled within inches of it. His first thought was that it was simply a long, thin grass stem fallen on its side. But this theory evaporated as he got closer. Still, it was not until he was actually up against it that he recognized it for what it actually was—a thin, taut wire stretching across the field just below the tops of the weeds.

Had he been walking he not only would not have seen it until he tripped over it, it would never have occurred to him to look for any such thing in the first place. As it was, encountering it slowly, he had a chance to think about what it might mean; and the friendly old cluttered attic of his memory helped him out with bits and pieces of information read in the past. The wire could only be there to stop intruders like himself; and it might connect with anything from a warning system to a nearby cache of explosives.

He lay there, thinking about it. If nothing else, the wire was evidence that there was someone already holed up in the buildings ahead; and if that was so, then Eileen, if she was there at all, was almost undoubtedly a prisoner. Charity would not be likely among sick and dying people in this decayed, inhospitable land. But if there were unfriendly people in the buildings—possibly even now keeping a watch—Chaz would have his work cut out for him to get to the buildings without being seen.

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He lifted his head among the weeds to squint at the sky overhead. As always, the sun was invisible behind the sullen haze and cloudbank; but from the light he judged that the early winter afternoon was not more than an hour or two from darkness. When the dark came, it would come quickly. There were no lingering sunsets, nowadays—nor any moon or stars visible as guides, once the night had come.

Just at this moment he stiffened where he lay, like a hunted animal hearing the sounds of its hunters. A voice cried from somewhere far behind him, in the opposite direction from the house. The words it called were recognizable, half-chanted, on a high, jeering note: *"Rover! Red Rover! Red Rover, come over . . ."*

The voice died away and there was silence again. He waited; but it did not call again. He looked at the wire once more, and estimated that he could wriggle under it. It had evidently been set high so as to clear all the humps and rises of the ground along its route. He rolled over on his back and began to wriggle forward again.

Once past the wire, he turned belly-down again and continued on at as good a speed as he could make without thrashing around in the

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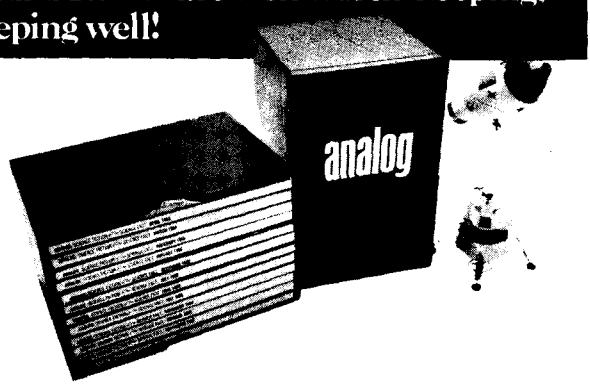

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weeds and perhaps drawing attention. He thought that he should not be too far from the relatively open area that had once been a yard surrounding the buildings; and in fact, shortly, he came up against the rotting stumps of what had once been a wooden fence. He passed this and the ground underneath was more even and less littered with stones. Also, here the weeds were not as thickly clustered.

He was racing now, however, against the end of the daylight, which could not be much more than half an hour off. So far he had encountered no more wires; but the thought that someone might possibly be watching him from the buildings sent a crawling feeling down his spine. He paused and peered ahead through the now-thin screen of grass and weeds.

He saw the side of the house, wooden shakes weathered and stained to a near-earth shade. What looked like three grave mounds, two with crosses half fallen down, were in the yard to his right. Above him a couple of broken windows, one above the other, faced in his direction; but there was no sign of anyone peering out of them. To his right was a door, above some broken steps. The door sagged on its hinges and stood slightly ajar inward—in spite of a cleaner, newer piece of board that had been nailed diagonally across its vertical cracks to hold them together. That new board shouted of danger; but the door ajar was an invitation, with night coming on.

Chaz wormed his way to the wall of the house, and then crawled along the foot of the wall until he came to the door. Slowly, carefully, he lifted his head until he could see around the frame and into the gap where the door hung open.

It took a long moment for his eyes to adjust to the inner shadow; but when they did, he saw nothing but a small, empty room, and a doorway beyond leading into a further room that seemed to have a window, or some other source of light; for it was quite bright by comparison with the first room.

Chaz dumped caution and hesitation together, and squirmed his way over the threshold into the building. Once inside, he scrambled to his feet quickly, and stood listening. But he heard nothing. A faint unpleasant smell he could not identify troubled him.

Looking around, he saw a heavy bar leaning against the wall beside the door; and iron spikes driven into the frame and bent up as supports. He reached out for the door and pushed it slightly closed; but it did not creak—surprisingly, it did not creak. He pushed it all the way shut and put the bar in place. Turning, he went further into the building.

Plainly, it had been a large farm-type home once upon a time, but its rooms were empty now, except for spider webs, dust and rubble. He

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went all through the rooms on the ground floor before realizing that the smell that bothered him was coming from upstairs.

Cautiously, he took the broad but broken stairs, lit by a paneless window on the landing above them. As he went up the smell grew rapidly stronger. He followed it to its source in a room on the floor above; and found what he was after.

He stepped into a room which had a piece of transparent plastic—non-refractive, as glass would not have been—stretched across its single, tall window. A small iron stove, unlit, stood in one corner, with a stovepipe going through the wall behind it. In the room were sacks and boxes, tools, and two old-fashioned rifles, a battered overstuffed chair and a wide bed. On the bed lay Eileen; and on the floor near the door, as if he had dragged himself, or had been dragged that far before the effort gave out, was what was left of a man. It was the source of the smell that had caught Chaz' attention. Up here the stench was sickeningly strong.

Almost choking, Chaz got a grip on the collar of the heavy plastic jacket the dead man was wearing and hauled the whole thing out of the room, down the stairs and to the door by which he had entered. He unbarred the door, rolled it out, then closed and barred the door again. He went back up the stairs, two at a time, to Eileen.

She was lying on her back on the bed, still in her jumpsuit. Chaz fanned the door to the room back and forth hastily to drive a little fresh air inside, and then went to her. She was half-covered by a very old, but surprisingly clean, blanket. As he watched, however, she muttered something and threw it off. Her eyes were half open, her cheeks were pink, and she licked her lips as if she was very thirsty.

". . . The Park," she murmured. "You promised, Mommy. The Park's open today . . ."

"Eileen," he said, touching the back of his fingers gently to her forehead. "Eileen, it's me. Chaz."

The skin of her forehead burned against his fingers. She flinched away from his touch.

"You promised," she said, "we could go to the Park . . ."

He reached down and unsealed the collar of her jumpsuit. In the late daylight filtering through the transparent plastic on the window, he could just make out small reddish areas on the slim column of her neck. Not ulcers, yet, but inflamed patches. That, and the terribly high fever—the first signs of sickening with the Rot.

She must have been outside the sterile areas four or five days already, and inhaled the rot-spores immediately when she was put out, to show signs this far advanced.

"You promised . . ." she said, rolling her head on the bed from side to side. "Mommy, you promised me . . ."

To Be Concluded

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THE WAR OF THE WORDS

It looked like the Ultimate Weapon;
it sounded like the Ultimate Weapon . . . but Man ha
something even more effective in his arsenal.

RICK CONLEY

Gray M

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The headless sentry, heedless of Sandifer's press pass, raised its rifle at the newsman with mechanical menace.

"Halt!" it rumbled. "Who goes there? . . . And where are you?"

"Easy there, pal," Sandifer urged, judiciously sidestepping the probing rifle barrel. "Let's not *both* lose our heads!"

The solid-state soldier clumped forward uncertainly, swinging the ugly muzzle of its weapon in a wide arc.

"Vocalize again, please," the robot instructed. "I can then open fire in the direction of your useless pleas and destroy you."

Sorry, tin soldier, Sandifer thought to himself, *but I've just developed a bad case of laryngitis!*

On tiptoes, he slipped around behind the acephalous sentinel and anxiously grasped the knob of the door it had been guarding—the door marked MEN.

"Well, will you *sub*vocalize?" the robot asked, tramping aimlessly. "Your cooperation will be greatly appreciated. Thank you."

Abruptly Sandifer whipped open the door. But before he could raise a finger to his lips to elicit silence, a familiar voice within effused, "Eugene, my boy! Come in!"

"Aha!" the headless sentry cried, instantly wheeling about and thrusting the rifle barrel into Sandifer's back. "Kill!"

Resigned to the inevitable, the newsman sagged against the doorjamb and awaited the explosively premature end to a promising career in T.V. journalism. His whole life flashed before his eyes in reruns.

"Stop!" A wizened, white-whiskered man in an oversized lab coat rushed forward.

Immediately the robot stood at attention.

"That's a good little soldier, Stonewall," the shrunken figure said. "Now return to your post."

"Yes, sir, if . . ." the creature rotated its left foot uncertainly ". . . if you would be so kind as to point me in the proper direction."

"Of course. Right this way."

Sandifer, wiping sweat from his brow with the back of his hand, staggered into the men's room and, exhausted, slumped onto a toilet seat.

Returning, the little man patted the reporter reassuringly on the shoulder. "Everything's all right now," he declared. "I've shut the robot down temporarily. I'm terribly sorry about this, uh, inconvenience, my boy; but you really should have shown Stonewall your press pass."

"I did, Professor. But since your *lookout* has no eyes—not to mention no head—he couldn't see it!"

"Hm-m-m." The gnomish figure scratched his scrubby chin. "I knew I'd forgotten something!"

"How could you forget a head?"

"No, no," the Professor protested. "I deliberately omitted the head. And, since Stonewall has no need to digest food, I implanted his brain in his stomach."

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Wild-eyed, he raised a clenched fist skyward and proclaimed, "Soon I shall have thousands of mechanical soldiers—just like Stonewall—with their brains in their stomachs! Do you realize what I will have achieved in such an army?"

"Sure." Sandifer shrugged. "Napoleon's ideal: an army that marches on its stomach."

"Tish tush, my boy." The little man sounded hurt. "I'm serious. Why, such an army would be invincible, because their brains—housed in their midsections—would be less vulnerable to attack and injury."

"Yeah," the newsman added, "and they'd be *blindly* obedient, too."

"No great problem. I'll simply install eyes in the stomach."

"Fine," Sandifer said. "Then Stonewall can stand watch against suspicious-looking belt buckles! Seriously, though, Prof, I suggest you junk that copper-plated commando before he kills somebody!"

The little man recoiled from the suggestion in horror. "Junk Stonewall? Why then I'd be forced to accept a *human* bodyguard from the Army. And I'd really prefer Stonewall's company; we see eye-to-eye on everything."

"I imagine you do."

There was a series of loud raps at the door. A beefy, moustachioed man in Army green entered.

"Your sentry's asleep out there," he complained. "He'll never get ahead that way!"

"He needs a head, all right," Sandifer agreed.

The portly man gestured with his thumb toward the newsman. "Who's the smart aleck on the commode?"

"Alec?" The Professor thought a moment. "Oh, no, you mean Eugene. Eugene Sandifer. Eugene, this is Colonel Stuckey of Army Intelligence."

Sandifer perfunctorily extended a hand.

"Huh-uh, buster." Stuckey shook his head. "I'm not helping you up. Get off that toilet lid by yourself."

The Intelligence man surveyed the men's room with interest. "Very good, Professor Colebank. I see they've finished installing your computers."

"Yes, just yesterday. Now it's complete. And you were certainly right, Colonel: I've absolute privacy in this, uh, privy."

"Pardon my ignorance," Sandifer said, rising, "but don't you think a men's room in the Pentagon is a little public for secret research?"

"Not to women it ain't," the Colonel grunted. "In case you haven't noticed, we're in the WACs' wing. No *lady* would think of entering a men's room."

"Yeah, but mightn't she ask what it's doing here—especially when it's guarded by a headless robot?"

"Mister," Stuckey snapped, "Army personnel never ask questions! They just follow orders." He tugged at his ratty moustache and

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looked at Professor Colebank accusingly. "Speaking of orders, I thought I told you this briefing was to be confidential. What's a civilian doing here?"

Colebank straightened his scrawny frame to its full five feet and two inches.

"Colonel," he replied indignantly. "I do not take orders from the Army. Just money! Besides, Eugene, here, is a reputable journalist to whom I shall be eternally grateful. He once covered my most promising experiment."

"Gave you a lotta publicity, eh?"

"Certainly not!" Colebank exclaimed. "I said he *covered* the experiment; covered it up! Messy! Messy! And you'd have thought at least one of those student volunteers would have survived. Ah, well, that was years ago . . ."

"Yes, it was," Sandifer agreed distastefully. "What's up *now?*"

"Ahhh." The Professor eagerly rubbed his hands together. "Come along and I'll show you."

He led the newsman and a scowling Colonel Stuckey to a large workbench that dominated the center of the lavatory. Resting amid Colebank's characteristic clutter of tools and tubing and wires was a singular object: a highly polished metal cylinder two feet across and one foot high. It was awash in a bluish haze of light; eerie, almost hypnotic. A complacent hum accompanied the rippling glow.

"What is it?" Sandifer asked.

"A weapon," Colebank responded matter-of-factly.

"Well, what does it do?"

"That's exactly what Colonel Stuckey asked me when he brought it here last week. And now," he beamed, "I have the answer."

"Well, what is it?" Colonel Stuckey demanded.

"Please, Colonel. Allow me to acquaint Eugene with the situation first; I assure you he will be discreet.

"Eugene, do you remember the Brittleweave expedition?"

"Sure. Not that there's much to remember. Brittleweave and a couple of other archaeologists waded into the Amazon jungle. Just recently they emerged with little to say and less to show for all their efforts."

"Yes," Colebank said, "and it's precisely what they did not show that's so important."

"You mean this . . . this weapon—"

"This weapon," Colebank continued, "comes from an ancient arsenal. A cache of secret weapons uncovered by Brittleweave—and created by an incredibly advanced prehistoric culture!"

Sandifer reexamined the cylinder. "Looks harmless enough to me."

"Don't believe it!" Stuckey snapped. "The Army's already tested the other weapons Brittleweave found. You can't conceive of their firepower! So if the Professor says *that* is a weapon, it's a weapon."

"And, in fact, it's the Ultimate

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Weapon!" the little man announced, affectionately patting the humming device. "Fifty thousand years ago, a great Earthly civilization built this machine to combat an alien invasion."

Stuckey made a rude remark—rude even for a conversation held in a rest room.

"No, true, I assure you; my computers cannot be wrong. Their translation of the documents found in the arsenal reveals that creatures emigrating from a far star warred against the Amazon culture for Earth itself. And the would-be colonists were winning. Yes, Colonel, winning even against the fantastic weapons you've already seen. Winning until—"

"Until the Earthmen built this thing!"

"Precisely, Colonel."

"How's it work, Prof?" Sandifer asked.

"A solid week of analysis has convinced me that, once activated, this device envelops the Earth in a high-energy force-net and disintegrates the enemy the world over! You see, you just push this—"

"Colebank!" Colonel Stuckey seized the little man's wrist and prevented his thumb from depressing a small stud atop the cylinder. "Are you trying to wipe out everybody on Earth? Get a grip on yourself, man."

"I'm afraid," the scientist sputtered, "you've beaten me to it. Let go. Let go, I say!"

"Reluctantly Stuckey released him. "You can't go around destroying the human race," the Colonel growled. "You're just a civilian!"

"Obviously you do not understand. This disintegrator is harmless to *us.* It is a *selective* weapon."

"I get it," Sandifer spoke up. "The device affects—destroys—only a certain kind of person. The aliens."

"Exactly, my boy."

"Well, that . . . that's different," Stuckey conceded. Warily he approached the cylinder. "Does it work?"

"It did at one time, I'm sure," Colebank said. He looked furtively about the lavatory. "I don't see any aliens now."

"Hm-m-m, yes." Colonel Stuckey put his thumb to the firing stud. "And you just press down like—?"

"Stop! Don't do that!"

"Huh?" Startled, Stuckey snatched his hand away from the ancient weapon. "Sez who?"

"Sez him . . . he . . . er . . . it?" Colebank pointed nervously past Stuckey and Sandifer toward the shape rapidly materializing in a corner of the lavatory.

The new arrival, a pale-skinned stick-figure of a man attired in white robe and sandals, raised an open hand in an apparently peaceful gesture.

"Grinnings and solicitations," he squeaked magnanimously. "Be not afeard. I am not an enema. I am a fiend!"

"What! What's that you say?"

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Colonel Stuckey exploded. "A self-confessed fiend, eh?" The bulky officer started to reach for his sidearm.

"No! Wait!" cried the stranger, eyes wide with horror. "Please wait just one momentum!"

The exotic creature tore a glittering gold chain from around his neck. "My lingual translator," he explained, hastily indicating a small black cube suspended from the necklace. "A—a slight adjustment seems in order."

The intruder slammed the translator against a wall several times, then examined the device critically. "Ah, yes, yes. Now I am sure we shall be able to excommunicate much more meaninglessly," he declared. "Uh, let's see . . . Where was I?"

Colebank spoke up: "You'd just announced yourself a fiend and—"

"No, no. Please, no help . . . ah, I remember!" The creature cleared his throat and squeaked, "Greetings and felicitations. Be not afraid. I am not an enemy. I am a friend! And as a friend, I entreat you to move away from that weapon. You cannot possibly appreciate its danger to—"

Suddenly Sandifer sprang at the deadly device.

"Maybe *we* can't appreciate its danger, but obviously *you* can," the newsman observed grimly. "So let's dispense with the formalities and get down to business! Who are you? How'd you get in here?"

Uncomfortably aware of Sandifer's thumb poised precariously above the firing stud, the stranger responded anxiously, "I . . . I am called Klutz. Klutz of the star system Alpha Obscuri. I teleported here from my spacecruiser, in which I had been orbiting your world until suddenly my instruments detected *that.*" Ashen-faced, he indicated the shimmering cylinder now in Sandifer's possession.

"You say you had been orbiting Earth. Why?" asked Colebank.

"I am a census-taker. I—"

"A census-taker!" Colonel Stuckey exclaimed. "Who for?"

"For the Obscuran Empire, of course," Klutz squeaked grandly. "I am a loyal servant of that beneficent tyrant King Galactose the Gutless."

Stuckey nodded confidently. "Yeah. Now I get it. You're a scout for this King Galactose, who's fixing to take over the Earth!"

"Take over the Earth?" Klutz snorted. "Why should the King wish to take what is *already* his?"

"WHAT?" Sandifer, Stuckey and Colebank cried as one.

The alien answered matter-of-factly, "This planet has been the recorded property of the Obscuran Empire for the past fifty thousand Terran years."

"Fifty thousand years?" Colebank gasped.

"Yes. Since the reign of King Maltose the Milquetoast, I believe, when Obscurans first colonized this sector of the Galaxy. Prior to that time, according to our records, a surprisingly advanced native culture flourished on this little world; a culture whose

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technological achievements rivaled our own—almost. But now, unhappily, those achievements lie in the past—uh, buried along with the achievers themselves." A grim smile played on Klutz's lips. "It does not pay to get in the way of progress, you know."

"You're crazy!" Sandifer snapped. "The Obscuran invasion was a flop! *This,"* he tapped the cylinder several times as Klutz winced, "destroyed all the would-be colonists!"

Klutz shook his head vigorously. "My instruments tell me this weapon is quite capable of doing that. *However,* my eyes assure me it has never been used—for even now I am looking at the descendants of our Obscuran colonists!"

"Where?" Stuckey demanded fiercely, drawing his service pistol. "Where are those damned aliens? I'll get them!"

Colebank sighed. "I believe he means us, Colonel," he said wearily.

"Aha!" The soldier laughed triumphantly and thrust his pistol against Colebank's bulbous nose. "Hands up, you traitor! You too, Sandifer! You're both under arrest as agents of a foreign power!"

"I'm sorry, Colonel," said Colebank, brushing aside the gun, "but if you arrest us, then you'll have to arrest the entire human population of this planet—including yourself."

"Arrest myself? Why, I can't do that. That'd be almost like arresting a relative!"

Sandifer scratched his head in wonder. "Talk about irony! Our ancestors wipe out the original Earthlings before the natives can fire the Ultimate Weapon. Then we come along, ignorant of our history, intending to trigger the weapon, and almost eliminate our future!"

"Do not fret," advised Klutz. "It is not uncommon for an isolated, backwater colony such as yours to forget its grand origins. Cut off from the mainstream of true civilization, it is inevitable that your culture should degenerate so miserably. I am only thankful that I chose to visit Earth at this time." He glanced at the weapon and shuddered. "Any later and I could not have fulfilled my mission."

"Mission?"

"To reacquaint you pathetic savages with your proper role in the Empire."

Colebank approached Klutz, the wizened scientist's arms outstretched to embrace the spindly form. "My brother of the spaceways," he cooed, teary-eyed, "you have come to share with us the secrets of the Universe, to lift us to the stars, to—"

"Ugh! Keep your distance," Klutz pleaded. "I beamed down here rather hurriedly; I may not have received all my inoculations! Besides, uh, you misinterpret your destiny."

Colebank halted and folded his arms across his hollow chest in disgust. "Then what exactly is our destiny?"

"Why, to become a full-fledged, seventh-class, supernumerary slave-

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labor protectorate of the Empire, of course."

"What does that entitle us to?" asked Sandifer warily.

"To benign exploitation and eventual ruination at the heel—er, hands—of a grateful Empire."

"Hm-m-m, that doesn't sound too promising," the newsman decided.

"Oh, but just think! In no time at all you might qualify as a *sixth-class,* supernumerary slave-labor protectorate."

"And what does *that* entitle us to?"

"Well, uh, frankly we thought the new title would be enough."

"We'd still be exploited then?"

"Naturally," Klutz answered in a hurt voice. "What's an empire for if it can't exploit someone?"

"You know, he's got a point there," Stuckey commented.

"Yeah, right at the top of his head," said Sandifer dryly. "Sorry, Klutz, but I'm afraid we aren't interested in rejoining the Empire."

"But you have no choice. You puny degenerates cannot oppose the will of the Obscuran Empire! Now, enough of this idle chatter. I must arrange to transfer your world to slave-labor status. Bring me your spokesman."

"Which spokesman?" asked Colebank. "It's an election year."

"Your king, of course," Klutz replied impatiently. "Surely even this pathetic dust mote in space has a king."

Suddenly Sandifer was smitten by inspiration. "Professor," he intoned, "summon *the Emperor.*"

"What emperor?"

"The Emperor of Earth, of course! Emperor Stonewall!"

"Oh? Oh! *That* emperor!" Recognition of the scheme flickered across Colebank's face. "Yes, Eugene. At once."

The little man darted out of the lavatory only to return scant seconds later and announce solemnly: "He comes!"

Squeaking joints and clattering footfalls signaled the approach of the great personage.

"Bow down, Klutz," Sandifer admonished. "Bow down to Stonewall the Stainless."

The Obscuran responded testily, "Normally I do not condescend to—"

All at once his mouth flew open and his eyes bulged in horror as the armed, acephalous automaton clanked across the threshold of the lavatory.

"Halt! Who goes there?" the headless hulk demanded, raising its rifle in the direction of Klutz's whimpering.

The alien bowed hastily. "I—I am Klutz, your highness," he stammered.

"O.K., Stonewall, lower your weapon," Colebank whispered to the automaton. "Staring down the barrel of an M-16 has improved our friend's manners."

Straightening up, Klutz eyed Stonewall suspiciously. "This is most

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unusual," the alien declared. "A robot for your emperor?"

Sandifer laughed haughtily. "Oh, come now, Klutz. Surely such sophisticated machinery is not unknown even to your stagnant culture!"

"Stagnant indeed! I'll have you know that my people have long been served by such machines!"

"Oh, really? How fascinating," the newsman yawned. "Our people have progressed beyond that primitive stage: the machines don't serve us; we serve the machines."

"This is incredible!" exclaimed Klutz.

"This is preposterous!" roared Stuckey.

"No! This is progress!" proclaimed Sandifer, elbowing Stuckey in the stomach and out of the conversation. "This is the ultimate in progress. Even a throwback like you, Klutz, should be able to appreciate the inevitability of a mechanical monarch."

"Not to mention its advantages," said Colebank. "Stonewall is shockproof, self-winding and comes with spare parts. Can you say the same about your king?"

The Obscuran's face reddened with rage. "You speak as though *I* were the savage, not you."

"Well, you are," Sandifer insisted. He smiled smugly. "As you've said, Klutz, when a colony is cut off from the mainstream of civilization, cultural degeneration is inevitable. But sometimes it is the mainstream that goes down the drain. Sometimes it is the colony—forgetful of convention, unmindful of taboo—that moves ahead.

"Sorry, Klutz, but this time, your empire is on the wrong side of the degeneration gap."

"Ha! Why—why we Obscurans are masters of space. In our spacecruisers we can traverse the Galaxy in only a few months!"

"Why not just teleport?"

Klutz gulped. "Across the whole Galaxy? Physical law strictly forbids—"

"Aw, we repealed that law ages ago," Sandifer said. "Watch!"

The newsman snapped his fingers, then smiled confidently. "How was that?"

"Uh—how was what?"

Sandifer's features drooped in mock disappointment. "I thought you'd be impressed. After all, I just teleported to the center of the Universe and back."

"Impossible!" scoffed the alien. "I saw no such thing!"

"Well, I did," asserted Colebank. "I was already at the center when he arrived. We teleported back together."

"B-but that's incredible," Klutz stammered.

"Have I ever lied to you?" Colebank inquired sweetly.

"Want to see it again?" Sandifer volunteered.

"I would," said Colonel Stuckey anxiously. "Could you fellows teach me how to—"

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"Shut up, Colonel," suggested Sandifer.

Klutz cradled his head in his hands and moaned, "No, no, this can't be happening to me! Always before the colonies I visited were so backward. Why, one had even reverted to using fusion reactors! But now—"

Abruptly he jerked his head upright and shot an accusing forefinger at the toilets in the lavatory. "Aha!" he exulted. "If you Earthlings are so advanced, why do you retain such archaic waste disposers? *Ours* are a vast improvement over your outmoded commodes!"

Sandifer flushed. "Well, uh . . . uh, those aren't commodes, you see."

"No?"

"No. They're—they're matter transmitters!"

"Matter transmitters!" the alien gasped.

"Yes, indeed! Why, some of the Pentagon's best output goes through those," Colebank assured him.

"I'm surprised you'd think they were toilets anyway," said Sandifer. "Who needs toilets?"

"What?" Klutz choked.

"We Earthlings enjoy total reconversion of matter and energy within our own bodies," the journalist explained. "We recycle our wastes internally; we eliminate nothing."

"Nothing at all?"

"Of course not!" replied Colebank harshly. "Don't you know elimination is waste?"

"Amazing. Simply amazing."

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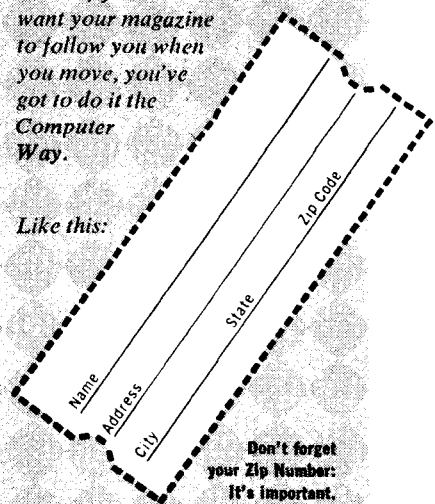

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Klutz's voice was flat; his eyes glazed. "I've never encountered a culture as advanced as yours—mechanical monarchs, unlimited teleportation, internal recycling. I—I don't know what to say."

"Don't say anything," Sandifer advised sternly, "especially to your king."

"But he must be notified at once that—"

"That what? That his empire has finally met its match? No, I don't think he'd like that."

Klutz winced at the thought. "I, uh, think you're right."

"Then, too, if your people learned of our magnificence, some of them might decide to visit us," Colebank warned, "and frankly, Klutz, their very presence would only disgust us. It would remind us of our bestial origins."

"So we wouldn't like any more visitors," Sandifer concluded nastily. "In fact, we wouldn't like them *so much* that we might be forced to take drastic measures!"

"Oh, no! No!" whined the Obscuran. "Don't worry! I'll say nothing. Nothing!"

"Fine," approved the newsman. "I know Emperor Stonewall is pleased with your cooperative spirit." He gestured grandly at the metal monster. "Until now he's refrained from entering the conversation since, of course, you are beneath his notice—fortunately for you! Now, however, I'm sure he wishes to dismiss you personally. With his blessing."

"Scram!" Stonewall commanded.

"Gl-gladly!" The quivering form faded from view.

"Well, that's one census-taker who's taken leave of his census," chuckled Sandifer.

Colebank clapped the newsman on the back. "Eugene, my boy, that was a beautiful snow job you gave him!"

"Aw, thanks, Prof; but you know I didn't go to broadcasting school for nothing."

"Yeah, you were great, pal," bellowed the Colonel. "You really surprised me. I never knew we had matter transmitters and that other swell junk!"

"Yeah, uh—but don't forget Emperor Stonewall, here. He's a hero, too." Sandifer burst into laughter. "Imagine, a headless figurehead!"

But Colebank did not share his humor. The little man frowned, declaring, "You know, I'm not so sure that we've seen the last of the Obscurans."

"Huh? I thought you said I snowed Klutz pretty well."

"Maybe too well," Colebank replied. "They may come back demanding foreign aid!" ■

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P. Schuyler Miller

THE NEBULA AWARDS

Analog has a winner among this year's Nebula Awards, made by the Science Fiction Writers of America for the best science fiction and fantasy novels, novellas, novelettes and short stories. Katherine MacLean's "The Missing Man," the cover story for March 1971, was voted Best Novella.

You'll get a short report this year. I have read and reported on all three of the top-ranking novels–Robert Silverberg's "A Time of Changes" won, with Ursula LeGuin's "The Lathe of Heaven" and R. A. Lafferty's "The Devil is Dead" running second and third. Silverberg, I'm told, withdrew two other books that might have diluted his vote.

I hadn't read the shorter stories, and still haven't seen some of them. Three came from a new paperback anthology of new stories, Ace's "Universe 1," that I somehow missed. (Occasionally a publisher's computer sends me Gothics or Westerns instead of the SF it is supposed to ship me.) Another is from a book–hard or soft–that I still haven't identified.

Nemmind. Best Novelette was Poul Anderson's "The Queen of Air and Darkness," featured in *F&SF*'s special Anderson issue in April 1971. It sounds like fantasy, it begins like the finest of evocative fantasy, and it utilizes a theme that is ingrained in human mythology . . . but it's a good, sound, thoughtful SF mystery about a kidnapping on a distant planet.

Silverberg won again in the Short Story category with "Good News from the Vatican," from "Universe 1." If I track a copy down, I may report–I do have "Universe 2."

The rest I'll simply name. Runners-up for Best Novella are Kate Wilhelm's "The Infinity Box" from "Orbit 9," and Jerzi Kosinski's "Being There" from a book of the same name, which I've missed. Both of the other award-pushing novelettes are from "Universe 1": Edgar Pangborn's "Mount Charity" and Joanna Russ' "Poor Man, Beggar Man." And the other finalists in the Short Story class are Stephen Goldin's "The Last Ghost" from a paperback collection of originals called "Protostars" (Ballantine) and Gardner Dozois' "Horse of Air" from "Orbit 8," which I have reported here somewhere but have forgotten. Sorry.

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The news, as usual, comes from Charles and Dena Brown's biweekly SF news-sheet, *Locus.* The Browns are moving to California, and I'll try to remember to give you their address when I get it. So far as I know this is the only currently functioning news fanzine that appears regularly and on time. If I'm slandering someone, I'm sorry: it doesn't detract from *Locus.*

THE TERMINAL MAN

By Michael Crichton • Alfred A. Knopf, New York • 1972 • 247 pp. • $6.95

Michael Crichton has a degree in medicine and draws the backgrounds for his science fiction novels from the forefront of medical research. I don't know whether this book will be as popular as "The Andromeda Strain," but the inevitable film may be even better, for the framework of the plot is closer to things film makers can understand.

Harry Benson is a computer technician, an intelligent, hard, prickly individual bothered by the feeling that machines are shoving man out into the cold—making him redundant. He suffers from psychomotor epilepsy, a condition that the author documents back for a century in his introduction and bibliography (this time apparently a real one, without the gimmicks that tripped up many people—including me—in "The Andromeda Strain.") Under attacks, Benson blacks out and becomes dangerously violent.

This is a condition that the University Hospital Neuropsychiatric Research Unit proposes to treat by computerizing him. Electrodes will be implanted in his brain, and when one electrode signals the approach of a seizure, a microcomputer implanted on his back, complete with its own plutonium power source, will counteract the buildup by flooding Benson's pleasure centers and calming him down again.

The planning, the rationale, the operation, and the atmosphere of a research hospital are beautifully handled, as you'd expect if you recall the laboratory phases of "The Andromeda Strain"—the phases that critics found boring and "unrealistic" in the film. ("People don't do anything but look at dials and push buttons.") There is one nay-sayer, Janet Ross, the psychiatrist on the case, and her qualms are more intuitive than objective.

They are right, though—for Benson runs amok. A feedback cycle builds up in him, in which brain and computer team up to accelerate attacks which will trigger pleasure stimulation, until he breaks out and goes on a murderous round of his old haunts, with Dr. Ross and others of the staff on his track. In the end, of course, he is cornered . . . but I have to leave some of the plot for you, even though the trimmings make the book.

I hope Michael Crichton doesn't forsake the future. He understands it so well.

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THE DOORS OF HIS FACE, THE LAMPS OF HIS MOUTH
by Roger Zelazny • Doubleday & Co., Garden City, N.Y. • 1971 • 229 pp. • $4.95

Roger Zelazny's recent books have been out-and-out fantasies, or borderliners so close to the margin that I haven't attempted to report on any of them here in the Reference Library. Now, if there are any of you who haven't encountered him, we have a collection of his major short stories and novelettes.

The title story, which won a Nebula award as best novelette of 1965 (the first year in which the Science Fiction Writers of America made their awards), is probably the last of the grand "wet Venus" stories. The dead herring on the jacket bears no relation at all to the gigantic monster of the Venerian depths that is hunted and killed in this story of physical and psychological struggle. "A Rose for Ecclesiastes," an even better story, lost out in competition with Jack Vance's "Dragon Masters" in 1963. "A Rose for Ecclesiastes" does for Mars what "Lamps" does for Venus, as its poet hero searches for the essence of Martian religion and society.

A fascinating shorter piece, "Devil Car," could show the black side of Ron Goulart's yarns of the war between men and machines. Automated cars rove the western deserts and mountain valleys in packs, preying on each other and on men, led by the fiendish machine of the title. Zelazny's "Damnation Alley" may have been a spin-off of this, but the short story is the good one.

More pretentious, but less satisfying, is "This Mortal Mountain"—a man-against-nature story, never as believable as the submarine struggle of "Lamps," with an utterly conventional cop-out of an ending. "This Moment of the Storm," on the other hand, does make the tensions of the terrific storm entirely believable, and "The Keys to December" draws the reader into the generations-long struggle of man-made cat-people to make a home in a galaxy that has no use for them any more.

The other stories are shorter; some of them are no more than vignettes and gag-pieces. "The Monster and the Maiden," in which we see the traditional sacrifice from a different angle. "Corrida," in which the narrator finds himself in the wrong body at the wrong time. "Collector's Fever," whose moral is that it pays to understand doubletalk. "The Great Slow Kings," almost as lethargic as normal governments. "A Museum Piece," which could almost be a switch on one of John Collier's grand fantasies. "Divine Madness," some nonsense about time and second chances. "Love is an Imaginary Number," one of the myths to which Zelazny has been devoting himself in his novels. "The Man Who Loved the Faioli," which creates a myth instead of borrowing one. And "Lucifer," the best of these short bits, in which the last man brings the last

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city to life for a very few moments.

Hors d'oeuvres, really—all of them—though they have the unmistakable Zelazny flavor. You'll read them for contrast with the longer stories. Those will be in anthologies for a long time.

HAWKSHAW

By Ron Goulart • Doubleday & Co., Garden City, New York • 1972 • 162 pp. • $4.95

WILDSMITH

By Ron Goulart • Ace Books, New York • No. 88872 • 128 pp. • 75¢

Ron Goulart has made himself the Mack Sennett of current science fiction. I barely remember the Keystone Cops myself, but in the dear gone days of silent and early sound films, there were always short, wholly ridiculous comedies on the program along with the newsreel and coming attractions (and—yes—in bush-league theaters, commercials). They made you feel good, and got you in a receptive mood for whatever was coming. Now, of course, they are fodder for Ph.D.'s . . .

Goulart's farces have much the same effect. They are wildly funny, and preserve some of the "see it coming" aspect of old-fashioned comedy, along with the logicless "anything may happen" approach of modern "humor."

"Wildsmith," for example, has been stretched and converted from a short story in last year's "Broke Down Engine." The short yarn about the robot author who developed assorted psychoses and went around dismantling himself and sending his hands and other parts to his admirers, is now book-length. Muscadine of the short story is Wildsmith of the book, only more things happen to him on the way to total destruction.

"Hawkshaw"—really a shorter book I think—is one of the rib-busting cycle Goulart is writing about the world "after things fell apart." We've seen future California at its zaniest in previous books; now we get a look at the uptight East. It has fragmented into cuckoo enclaves like the West, but they are eastern-type New York/New Jersey/Pennsylvania/Connecticut (mainly Connecticut) nuthatches. The Original States are back under the Articles of Confederation, or something recalling them, and Noah Kraft is a newsman for Thirteen Colonies Affiliated News. (You have met other Goulart newsmen on Murdstone and other planets.)

Kraft is sent up to Connecticut to check on a werewolf story. He meets it—him—and becomes deeper and deeper involved with the affairs of the Robin Hood Foundation (take from the poor and give to the rich), the Jersey Mafia (or some other nonexistent facsimile of that nonexistent nonorganization), the secret agent who uses the code name Hawkshaw, George Washington II, some delightful dolls (couldn't Goldie Hawn play a Goulart heroine just once?), and juicy amounts of nonsense.

But is it worth $4.95 to you?

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BRASS TACKS

Dear Ben:

The John W. Campbell Memorial Fund for Basic Research has been established at the Massachusetts Institute of Technology. Monies donated to this memorial fund by friends and admirers of the late John W. Campbell will be used for basic research—*period*—with no other stipulations or strings attached.

I have been advised that donations to this fund are tax deductible.

Mrs. John W. Campbell has asked me to assist in the administration of this fund, which I am glad to do even though the reason for the fund's existence is certainly not a gladsome thing.

I believe that one way to honor and remember this great man who taught so much to so many of us is not only to carry on in his tradition but also to help make it possible for others to do the same.

Donors may, of course, send checks directly to Miss Winifred T. McDonough, Assistant Recording Secretary, Room 4-113, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139. Or they may send them to me made out to the J. W. Campbell Memorial Fund. I have been forwarding these checks monthly to MIT and keeping a little book of donors which will be turned over to Mrs. Campbell.

In case readers may be interested, a total of $778 has thus far been donated to the fund. If you wish, I will keep you informed of the total amount each month, so that you can put it in the magazine. I, for one, think that John W. Campbell's memory is worth considerably more than the above amount.

G. HARRY STINE
127 Bickford Lane
New Canaan, Connecticut 06840
So do we all.

Dear Ben:

Sitting and thinking, the thought came to me that there exists one singularly appropriate way of honoring the late John W. Campbell. Throughout his life, as evidenced by his editorial viewpoints, John Campbell maintained as one of his primary postulates that people should not be bound by perhaps incorrect traditional viewpoints and assumptions. "Devil's advocacy" was the weapon he skillfully wielded against a blind acceptance of the truth of what an "authority" says.

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With John Campbell in mind, I address this letter to those groups responsible for the Hugo and Nebula awards, with the hope that they will create a new category within their awards, a *New Outlook* category, *Dedicated to the Ideal of Independence from Traditional Problem-Solution Patterns.* This would be a truly appropriate way of both honoring John Campbell, *and* helping to insure that his nontraditional outlook does not become relegated to the "Fond Memories" department of people's minds.

With hopes that this suggestion does not just find a nice shelf to gather dust on . . .

LARRY A. ETKIN
25 Day Street
Fredonia, New York 14063

The award could be in the shape of a sharp needle about to burst a balloon.

Dear Mr. Bova:

Your first editorial in the February issue of Analog was a hopeful sign, but I regret that the March issue did not live up to my hopes.

First, the editorial (March) shows a distressing naïveté shared by much of the (so-called) Now Generation. You expose a lot of "myths" and, in doing so, display many of your own.

Of course prisons are not for professional criminals: Professionals, when they get good enough, are their own best remedy. A thief rich from his profession becomes a member of the approved order, and as such acts to preserve the system. There is nothing like a professional thief turned city father (or alderman, or senator, or even President) to protect the property of the city. He knows the ropes, he knows what to expect and how to prevent it. A successful thief is worth hundreds of idealistic reformers who *know* they can do what has eluded all their predecessors.

Prisons are for bunglers, incompetents and the hopelessly vicious.

It is depressing to continually hear the apologia offered by the "intellectual" generation we now have. There are many types of apologia, but one of the most blatantly foolish is the "prisons are not for *punishment*" proposition. It seems that we should consider prison either as a form of finishing school or as an evil in itself wished on helpless and rather noble men.

Unless jail is enough to scare even the stupidest, most psychotic would-be criminal into a panic just at the *thought* of it, then the system has failed. This calls for sadistic, harsh and exceedingly repressive conditions in the prisons themselves, *precisely* the conditions that kept our jails mostly empty during the nineteenth century.

Our prisons have moved from grim, vicious, dank holes where men died miserably without notice, to airy, clean and brilliant centers of social activity—centers which congressmen and committees move in and out of like birds in migration. Every criminal has not only his rights but

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solicitous social workers, protective lawyers and dedicated humanists such as Capote.

But, if one may ask an honest question in this time of tirades and closed minds, has this enlightened attitude really *helped?* Has crime decreased? Have criminals been rehabilitated?

Alas, no. The Now Generation will find countless rationales: We haven't really *tried,* old habits die hard, the Establishment is against us . . . and so on. But the simple fact is that crime has increased out of all proportion to the population, in direct (if not geometric) ratio to the amount of loving care lavished on our prisons and their inmates . . .

The lead story in the March issue is a good example of what's wrong, and how you are following the leader into the garbage heap. The story is the sort of thing to be expected of Pohl, or Ellison, or Silverberg, or any of the New Wave mob. They aren't authors, not a single one of them, although they are all competent wordsmiths. Heinlein at his best makes them look like the sad sacks they are, completely devoid of humor, compassion or humanity.

Because they are, you know; that is the paradox. They write (and endlessly profess) great devotion to humanity, dedication to the human race, of the crying need for this, or that, or something else—but in truth they have lost, or never had, any contact with humanity. This is easily demonstrated; of the many things common to mankind, and the one of which we should be most proud, is our ability to laugh, to express pleasure at life and at the wonderful things which happen day in and out to everyone. Life is *not* a steady whimpering crouch under the shadow of the Bomb, or War, or misery in general.

Try to find pleasure or laughter in Ellison, or Pohl, or any of the New Wave fools. They spend all their time crying over the lousy condition of the world . . .

GERALD L. HEWETT
34B Sykes Circle
China Lake, California 93555

Have you read "Blunderbird," "Day Million," or any of the Robert Randall stories? Or been in jail? And who says the nineteenth century was so crime-free? Jesse James?

Dear Mr. Bova:

I have just finished the February 1972 Analog, a little late this month. Both my husband and I have always felt a great admiration for John Campbell's editorials, even when we did not entirely agree with his thinking on a subject. We have hopes that you will continue the great work.

However, in reading this editorial I was, for the first time, convinced that I had to put in my two cents' worth. On a whole, the editorial is good and gets across a point. But in doing so, you refer to those who would have us pack all science and technology in a bag and throw it away, and of those who might carry

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us on to a second-generation technology. But, you completely ignore that large and ever-growing group of us who neither wish to throw out all the technology, nor are really prepared to plunge into a new generation of technology, but have come to the point of questioning the marketable results of our modern technology.

Of course, our country has grown up on the much-touted value of electrical gadgets. We have been taught to believe that an electric mixer is all-powerful in the kitchen and yet find it hard to believe when Julia Child demonstrates that she can outbeat egg whites in the contest between herself and an electric mixer.

We air-condition our homes in summer, and then go to bed under an electric blanket because the same air-conditioning makes it too cold to sleep comfortably. What justification can be made for such an uneconomical and nonsensical move?

True, many of us would die if the world were suddenly to become devoid of electrical power. Why? Not because we can't live without technology, but because we have grown up without either the equipment or the knowledge to live in a nontechnological society. Most families are unable to light even a charcoal fire without the aid of starting fluids—how then could they ever expect to light a wood fire without such "aids"?

You down "organic farming" as if it were just a fad with no basis in fact . . . Not so. In the past few years, a number of commercial farms have "gone organic" and now produce as much, and in many cases much more, than they were able to yield when running chemically. Unfortunately, to farm organically takes a great body of knowledge and a great deal of intuition that many of the modern farmers lack. To switch over completely immediately *would* mean starvation for many, but not necessarily for long . . .

PATRICIA C. SPIER
63 Howard Street
Cambridge, Massachusetts 02139

Without electricity, and modern communications, and modern farming methods, most human beings on this planet would starve—not for a while, but TO DEATH!

Dear Mr. Bova:

In reference to your editorial entitled "Born to Lose," I wish to compliment your insight into one of our most destructive social problems. However, I believe that there is more to this problem than what was covered in your editorial. Time and space obviously do not allow all aspects to be covered. However, I would like to add my thoughts to the subject.

The prison is only the most obvious part of the system in need of reform. No amount of cyrogenic storage of desperate inmates will help until our whole system of values changes. The prison system itself is

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already a giant human warehouse, but the same can be said of many other situations as well. Other examples are in the Armed Services, especially the Army as it is still organized, Civil Service, and most private organizations, both large and small.

The same, or some of the same, dysfunctional social habits can develop in affected individuals depending upon how much subjugation and mental deprivation they experience. The military and industry are not quite as free of these problems as one could be led to believe from reading your article. For example, an Army combat unit, not on active duty, bears a closer resemblance to Attica than it does to Christopher Anvil's very desirable "Space Patrol" . . .

Let us now consider your young man in the black leather jacket, newly released from his first term in prison. Let us also assume that by some miracle he was able to pick up some learning and usable skill. Now he must find work where he can use these skills. Can this be done? Not likely. Nearly every employer wants a résumé; his whole past record is demanded before he is even allowed to talk. There are still too many unblemished records walking around which are hired first. Jobs where questions are not asked are usually dead-end jobs. If he is hired at all, prejudice will see to it that he is first to be laid off. Even in lower menial jobs, he still stands a good chance of being hauled into a police lineup. If this happens during working hours, he stands a good chance of being fired. Lying about your past is usually grounds for instant dismissal. Can he go elsewhere and start over again, as a glib believer in romantic myths would suggest? No. Your record is always with you, for the previously mentioned reasons. Emigration? Possibly, if you can get a passport, and the other country is in enough need of whatever skill our young felon possesses . . .

The point I wish to make, is that the penal system does not provide any legitimate means for the vast majority to escape, since it does not allow for reconciliation to occur. As a result, more and more people are swept up in it, until there are fewer and fewer legitimate people who, in being placed under increasing pressure, are themselves more apt to be caught in the same trap. This whole solution, it seems to me, is one of the farces working toward social collapse in America.

CONRAD I. SCHLUM
6257 South Comstock Avenue, Apt. 14
Whittier, California 90601

There are constructive forces at work, too. And not every ex-felon returns to jail. In states such as North Carolina and Texas, much is being done to better the prison system. But there's still a long way to go.

Dear Sir:

I was pleasantly surprised by your March editorial, "Born to Lose."

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Pleased that you were *thinking* about the problem, surprised to find it in a sci-fi magazine.

I find I must disagree with a basic premise, however, and therefore some of your solutions. The real deterrent to escape is *not* the knowledge that it won't work. The only real deterrent would be the desire *not* to escape, brought about by the prisoner's knowledge that inside he has a chance—an acceptance as a human being, therefore treatment, concern and help—while outside awaits only poverty and the degradation of a dependence on crime. Sure, a prisoner wants out of prison—he wants out of a place where he is considered slightly lower than an animal, where he is put to work at ridiculous wages for the benefit of the middle class (what would your license plates cost if they weren't manufactured by prisoners?), where his every movement is preprogrammed and monitored. It is a dehumanizing experience and your proposal of electronic surveillance systems, hot wire and *automatic* gun stations, no less, is far more dehumanizing than the horrible conditions that now exist. Imagine being prisoner in a place where you *knew* there was no out! Imagine! People subservient to machines . . .

A jail is like the underside of a carpet—it's where we sweep the dirt. Then, in the process of pretending it's not there, we actually *do* forget it's there; finally, we actually believe it's not there at all.

The answer to prison reform lies in attitude reform. When society begins the process of rehabilitating itself, then perhaps it can assume the task of rehabilitating its criminals.

NANCY KLEE
229 East 4th Street
New York, New York 10009

Can today's convicts wait until then?

Dear Mr. Bova:

I have read Harry Harrison's latest serial, Part I, with great enjoyment. However, there is a technical blooper that as a student Air Force pilot I can't let pass. As Captain Washington is about to be thrown overboard the *Queen Elizabeth*, he is fighting both his captors and the thin air at 12,000 feet. One can estimate that the total time between the drop in pressure to ambient levels and passing out is at most a few minutes. Now, while the Air Force requires oxygen to be available in all flights above 10,000 feet, it does authorize flights up to 13,000 feet under emergency conditions for up to three hours. The time of useful consciousness (TUC) is more appropriate to an altitude of 35,000 feet. You don't suppose that this other universe calls a yard or meter a "foot," do you?

ALAN P. BIDDLE
Box 54
Moody Air Force Base, Georgia 31601

Well—I dunno. I gave up smoking after rock-jumping at 10,000 feet, because it was getting hard to breathe.

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BUCKMINSTER FULLER

continued from page 7

the thwarted genius within us all, is quite similar to the intellectual ideal of such science fiction thinkers as John W. Campbell, Theodore Sturgeon, and Robert A. Heinlein, which in turn has much in common with the countercultural vision of the new adult personality as the polymorphous intellect of childhood grown to glorious, unfettered manhood.

But on the other hand, Fuller is himself a self-styled comprehensivist who never was a specialist, and is old enough to remember when that dichotomy translated as "lone crackpot inventor" as opposed to "reputable scientist." He has plenty of personal reasons for scorning the specialized scientific establishment, which looked down on him as a zany crank for so many years. In many ways, Fuller sounds a lot like the hero of a certain musty old species of science fiction story; the maverick, the pragmatic seat-of-the-pants engineer, the eccentric inventor who happens to be a genius, and who saves the day by building a hyperdrive out of toothpicks and coat hangers when the pompous orthodox scientists with all their degrees and book-larnin' are powerless to do anything more than sputter ineffectually. It is easy to see how Fuller, who in a way really *is* such a science fiction hero in the real world, might come to generalize his own difficulties with the politics and rigidities of the scientific establishment into a kind of metaphysical rugged individualism. Further, great swatches of what he was saying came straight from his book; he was quoting at me, and there seemed to be a certain messianic bent in his outlook and style.

Yet Fuller is no wild-eyed crank; he has proven that he is what he claims to be. He is the inventor of the geodesic dome, an original and highly useful cartographic projection, a rationally designed toilet, a self-contained modular house, and dozens of other major and minor devices and conceptions covering a rather wide range of practical technology. Further, these inventions simply could not be dismissed as serendipitous freak discoveries, lucky accidents, or the result of dull trial-and-error donkeywork. Like the cartographic projection and the Fuller dome, most of them are the result of inspired and wholly self-conscious practical application of deeply understood topological and mathematical principles, analysis of the basic structures of nature, and the extrapolation of that pure knowledge to the creation of new technological concepts, surely the highest form of applied science. Perhaps Fuller is being overoptimistic in believing that we could all become synergetic Renaissance men, comprehensivists, but there is no doubt at all that he at least *is* what he is preaching.

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In response to the conventional question as to whether there is danger involved in turning too much over to computers, Fuller segued into a definition of one of his key concepts, "synergy," in that strange rambling style of his which seems to start by ignoring the question, but somehow manages to return to the starting point from a wholly unexpected direction after a series of complex ricochets along the complex contours of his mind.

"The computer is simply a very highly-compacted electronic bookshelf, our own brain with great capacity and very quick call-up. The computer will never do what the mind does, and I'm going to give you a very good reason why."

He then went into the rather involved history of the discovery of the law of gravity, which seemed to be entirely beside the point. But having extended his answer into these nether reaches, he then began to circle back. Speaking of any two masses exerting gravitic attraction upon each other, he pointed out that there was no property of either of these masses taken by itself that said it was going to attract or be attracted by the other.

"All you know is that they do attract each other, and at a certain fixed rate. This is called 'synergy' or 'behavior of whole systems unpredicted by the behavior of any of their parts.' The mind discovers relationships that are 'between' but not 'of.' For this reason, you can only program a computer to look for that which you know. The mind discovers things which are not of the parts of a system, so there's nothing you can put into a computer concerning any of the parts of a problem to tell it what to look for."

Thus does Fuller seem to verge on laying to rest once and for all one of the great bugaboos of our time: the myth of the potential omnipotence of the computer. According to Fuller, we have nothing to fear from this tool because the computer can deal *only* with discrete data, aggregates of individual bits, whereas the universe was full of synergetic behaviors such as gravity *which could not be meaningfully dealt with as the sum of discrete bits.* The computer is virtually by definition a device limited to extracting conclusions by processing discrete data through programs which can only relate bits of data to each other, whereas the human mind itself is a synergetic phenomenon, able to extract synergetic patterns from a study of the actual universe. In a very real sense, it takes a synergetic viewpoint to create the programs that allow computers to perform their analytical and analog functions, making a true "self-motivated" computer of the sort that might usurp human intellectual sovereignty a very fundamental contradiction in terms. The human power of intuition, which enables us to discover generalized synergetic properties of systems and thus do "creative" work, operates synerget-

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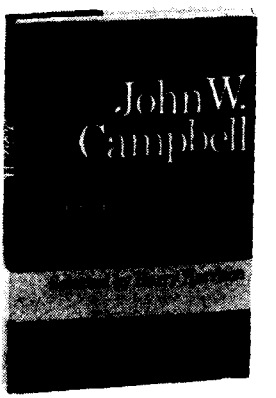

ically, rather than by totaling up the relevant discrete data and coming up with an "inevitable" answer inherent in the collected data itself. Thus it is thoroughly impossible to program a computer to mimic the synergetic intuitional function of the human mind.

"I'm absolutely confident there will never be anything like a mechanical brain," Fuller said firmly. "I've been up against a lot of computer boys and they cannot refute what I've just said."

I began to appreciate the power of the concept of synergy, for Fuller had used it to place the human mind back in the center of the human universe, and in purely rational terms, without resorting to any mystical mumbo jumbo. He had opened up a grand philosophic vista, by reintroducing essential mystery and human transcendence of the determinism of the machine into the scientific outlook on the human mind.

Fuller himself is rather obsessed with the concept of synergy, or perhaps it would be fairer to say that he is well aware of its centrality to his world-view. He throws the word at audiences wherever he goes, and according to him "less than three percent of university audiences throughout the world are familiar with the word *synergy,* which is the *only* word in the English language that means behavior of whole systems unpredicted by the behavior of their

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parts." He believes that this proves that society in general does not realize that there *are* behaviors of wholes unpredictable by behavior of their parts. Thus, our over-specialized society, by attempting to deal with wholes as nothing more than the sum of their specialized parts, blinds itself to the synergetic properties of systems, such as our "Spaceship Earth."

Here then is Fuller's common ground as a topologist and mathematician with the biological ecologists. Fuller views the Earth itself as a system which must be understood and managed synergetically, exactly like the complex closed world of a space capsule; the Earth *is* a spaceship in fact as well as metaphor, a closed ecology with a finite supply of air, food, water and minerals, but with an open-ended fuel supply in the form of solar radiation. Ecology is the study of the synergetic interaction of local biological systems, and by ultimate extension of the total biosphere of the Earth as an overall system, though many biological ecologists and almost all of their trendy groups seem to have not quite yet comprehended this overview. Fuller goes one step further and considers the entire Earth, not just the biosphere, as one single energy system, with all energy input coming from the sun, and animate matter as simply one means of "impounding" that energy, and an inefficient means of storing energy at that.

With this view of ecology as the study of the Earth's energy systems, he sees our ecological problems as the result of the mismanagement of our energy resources, caused by the fact that we are drawing all of our power from what he calls the "storage battery" or "starting motor" of Spaceship Earth: our limited and dwindling supply of solar energy stored up slowly over the course of millions of years in the form of fossil fuels like coal and oil. We are running on finite energy sources which will shortly be used up. But the amount of solar energy that reaches the Earth each day is more than vast enough to fuel a worldwide economy of superabundance, and the supply of such energy is for all practical purposes eternal; it will last as long as the sun is capable of supporting our form of life on earth. Therefore our fundamental ecological task is to develop a technology which will enable us to "switch over to the main engines" of our planetary spaceship, to tap the eternally renewed energy sources of the tides, falling water, the motion of the Earth, sunlight itself. Given this solution to our energy problems, we should be able to develop a sophisticated enough synthesizing technology to replace our present standard raw materials long before the supply gives out, for ultimately energy is the power to transform (and theoretically even to create) matter, and unlimited energy resources should lead to nearly unlimited transmutation capabilities in the long run.

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Thus, calling as it does for an even more sophisticated technology than we now possess, Fuller's strategy for the solution of our ecological problems is diametrically opposed to the antitechnological, back-to-raw-nature, intellectually reactionary, neo-Luddite machine-smashing mood of much of the American public today.

Yet paradoxically, Fuller has become something of a hero to that very segment of the population which in other contexts seems to vocally oppose further advances in science and technology. Weirdly, he is a man who has become a personal hero to his intellectual enemies. Why, I asked him, do so many young people who seem to share his synergetic world-view have such an antiscientific, antirational attitude?

Surprisingly enough, he seemed to have a plausible answer. "The young people are peeling off. The old thing isn't right, but they don't really have enough experience to know what *is* right. Because the old specialization was involved with technology, they think that's wrong too." He believes that the reaction against technology is in reality a reaction against the dehumanizing specialization that modern technology seems to imply. Thus, his synergetic message is in perfect tune with the antispecialization, comprehensivist, polymorphous style of the counterculture. The present antiscientific, antitechnological mood of the counterculture may very well pass once the link between technology and specialization is broken, and Fuller himself could become a catalyst in that process.

This all seemed quite plausible, but suddenly, without a noticeable shift of gears, Fuller took off for the wild blue yonder. He launched into a brief history of warfare from the punch in the nose to the ICBM, leading up to the conclusion that this is the first era in which the military have found that no one can win a shooting war. "So you go into psychological warfare. You spend much more money on psychological warfare, making it impossible for the other guy to make war. Everybody's economy is full of holes, so you go to break up the other man's stuff. World War III is over and the United States has lost it. Obviously, in order to carry on, you're going to have to have some kind of technology. The kids are completely, intuitively against the old, so get them to identify it with the technology, get them to hate technology."

What? Could a belief in the omnipotent powers of the dreaded International Communist Conspiracy be the cranky worm in Fuller's intellectual apple? Was he actually contending that the present antiscientific mood of American youth was a conscious creation of the Masters of the Kremlin and Peking?

Did he really think this was done as a matter of Russian and Chinese policy?

"I'm sorry to say that the worst of all the things that have been going

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on is the narcotic warfare," Fuller said. "All the sides have biological weapons, and narcotics are the step before this, if you want to play the card before biological warfare, get narcotics going, then you can really break the other guy down. This is not the first time it's been done, it was going on in the Chinese warfare a long time. The Europeans played it with China, and China played it with them. It was really a horrid game. The Chinese militarists did it to each other, it's an old-timer."

I found a certain double-edged fascination in all this. On the one hand, here was Buckminster Fuller, synergetic man, a savant to the counterculture, a hypersophisticated thinker, going on about a Communist conspiracy to defeat the United States by weakening the minds of American youth with hard narcotics, thereby brainwashing them into rejecting technology, and thus ultimately destroying the capacity of America to wage war. As a plot for a cheap thriller, it would still sound farfetched.

And yet, as with so many of Fuller's more cranky-sounding notions, it was not that easy to dismiss. After all, the Vietnam War has processed nearly three million young Americans over a ten-year period. Though the prevalence of marijuana smoking was something that the troops brought over from an America in which it had become a common pastime, the avalanche of heroin addiction that suddenly hit the American Army in Vietnam in the latter years of the war does look somewhat suspicious. Marijuana became harder to get in Vietnam and heroin became cheap and plentiful. China is a major grower of opium poppies. Further, much Vietnamese marijuana was laced with opium, so that heavy smokers could conceivably develop an opium addiction without even knowing it. Still further, the cheapness and strength of heroin in Vietnam causes GI addicts to develop levels of addiction which they can only support by active pushing once they are back in the United States, thus further contributing to the domestic heroin problem. Could all of this really have been a clever, conscious plot on the part of the Vietnamese and Chinese?

Did he think the Vietnam War has been used as a vector for narcotic warfare against the United States? I asked somewhat gingerly.

"It is experimental warfare," Fuller said, "just as the Spanish Civil War was experimental warfare for World War II."

And suddenly, he took one of his great logical zigzags. Warfare, he said, starting what seemed to be an irrelevant digression, is a product of an economy of scarcity, of living off the "storage battery" of fossil fuels, instead of the inexhaustible energy supplies of Earth's "main engines." When there isn't enough to go around, people fight over relative

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shares of what there is; this is the basis of the world's present money economies.

In the light of the potential of getting on the "main engines," present money economies and economic considerations are silly and self-defeating games. He defined "industrialization" as "getting off the starter (fossil fuels) and onto the main engines," building an economy of abundance. This seemed a bit fuzzy, since, in fact, by this definition there would not at present be an industrialized nation in the whole world. What he was really talking about was what conventional economists call "reaching the takeoff point," the point at which an industrial economy becomes self-regenerating and self-expanding, generating both its own further development capital and a rising standard of living, becoming an internally viable system.

America reached this point fortuitously during World War I, when the imperatives of wartime released the technological capacity of the country from the artificial constraints of the money economy (which was based on the false notion that production had to be limited by the amount of gold necessary to finance it). This produced an enormous spurt in productive capacity and energy output through largely unrestrained deficit financing.

"Stalin, who was a militarist, and expert in logistics, saw that people in America were eating, had great power, refrigeration, and so forth, and said, 'We've got to get onto that stuff.' He said, 'America really didn't need any money to do it.' So America very naïvely got this capability, but Russia went after it deliberately." But the Russians knew it would take about five five-year plans to reach the takeoff point. Their problem was how to hold the population together for twenty-five years, according to Fuller, "When somebody can come in and say, 'Your leaders are crazy, are you going to wait twenty-five years before you eat?' So the subversibility of such an attempt was very high. Luckily for Russia, their geography protected them, there were very few places where people could get in to subvert them, and they were able to guard those. And they said, 'We'll have a completely controlled press so no one can write things or broadcast to us.' So they were able to hold their people together by saying, 'If we are successful, the rest of the world is going to want to destroy us because the rest of the world asserts that socialism is impossible and only free enterprise will work.' So they made a working assumption of a World War II to come about 1943, and they were absolutely right."

Getting ready for a war is always a great tool of the social organizer, Fuller pointed out, because it frees a nation from the artificial restraints of the money economy. Hitler was able to utilize the same technique to build

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up a Germany that was prostrate in conventional economic terms. War, or the preparation for war, generates internal prosperity in an advanced country because it liberates the productive capacity from financial restraints.

"Unfortunately," he continued, "America was turned against Russia by such nonsense as McCarthy and the China Lobby at just about the time when China, with Chou and Mao, realized it couldn't go on with military monarchies chewing each other up, with everybody corrupt. Great wisdom of scientists had been there, beautiful technology through the years, enormous sense of economy, but absolutely corrupt. So you had Mao and Chou saying, 'We have eight hundred million people and no natural protection, our whole eastern flank is the Pacific Ocean where anybody can walk in on us.' How do you hold eight hundred million people together for twenty-five years and not get subverted? So they said to the Chinese people: 'The whole world is your enemy.' "

According to Fuller, the Chinese realized they couldn't afford to devote a large portion of their productivity to war. The Chinese had understood psychology for thousands of years: "So they said, 'Here's a growth of beautiful fruit, and the birds are going to try to get these fruits before they really grow properly; so what does nature do, she puts out terrific thorns to protect them. We've got to put out psychological thorns, the biggest psychological thorns that have ever been put out, and we must go out and really subvert these other people, both sides (the U.S. and Russia). That's what China has done, and done very brilliantly. They did it with the narcotics thing, and very many other things, but primarily they understood how you exploit a sorehead. China will become successful. She'll complete her twenty-five-year program, and complete it without any pollution, incidentally. Nobody understands technology as China does. They invented it: the printing press, movable type, the hot-air balloon, all these things came out of China. This is their world. When they become successful, they will remove the thorns and they will be out for equanimity more than anybody. I expect that by the mid-Seventies, 1975, China will be in. If society can go through that period without getting too confused, if we don't really push the buttons, I think we'll have it made on our planet."

It was an elegant and cogent theory of the history of the past, present, and future of the Cold War from an entirely fresh viewpoint. The recent thaw in Sino-American relations give it further credence. While Fuller may have been exaggerating the historical technological prowess of the Chinese (his contention that they invented the printing press and movable type, for instance, is rather dubious), it seemed to me that he understood something

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very fundamental about Chinese culture, something that crystallized a long-term crank notion of my own.

It seems to me that the root basis of any given culture is the basic linguistic viewpoint of its language, which both reflects and molds the world-view of the people speaking it. All the other attributes of a culture are elaborations of its basic mind-style. Indo-European languages such as English are linear in nature, sequences of words which stand for small quanta of information and whose positions in the linear sequence carry much of their meaning; such languages are written in a phonetic sequential alphabet whose letters have no inherent semantic content. Some consequences of this Western linguistic set are the notion of cause and effect, Aristotelian logic, the linear concept of time, a mechanistic physics, hierarchical family structure and government, and dualistic thinking. Sequential languages set up a decidedly nonsynergetic thought-style because they draw their meaning from the sequential placement of small, discrete bits called "words" which are in turn composed of smaller discrete bits called "letters."

But Chinese is a synergetic language. Instead of an alphabet, it is written in ideograms, each one of which is a synergetic symbol with a host of implied meanings and implications. The Chinese, therefore, think in fewer symbols than we do, but each symbol carries much more meaning, and their thought-patterns are less sequential than ours, and more comprehensivist. Some consequences of this Chinese linguistic pattern are a tendency to take metaphor literally (as witness the hysterical devotion to the sayings of Chairman Mao which are trite homilies in English translation), fatalism, difficulty in making subtle distinctions of meaning in new areas (since they must think in ideograms which are bigger chunks of meaning than Western words and are therefore harder to adapt to new circumstances), but also a far more Einsteinian subjective experience of time than our own, and a much easier adaptation to synergetic thinking, perhaps also a better gut-level grasp of topological mathematics and systems theory. Thus, perhaps a basic advantage in modern science.

When I explained this, Fuller's face lit up as if I had caught some telepathic gestalt that had been bottled up in his head for a long time. "Absolutely!" he exclaimed. "In China, you can't say 'red,' but there is a flamingo, and there's an apple, and what is common to them is 'redness'." Thus, an ideogram.

"The essence of Chinese," Fuller went on, "is what is common to these. So you come back to our friend, the generalized principle."

Or, I thought, the synergetic viewpoint: a natural consequence of the linguistic structure of the Chinese language, but something of a freak

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occurrence in a Western mind. In a weird way, Buckminster Fuller had come to think in a kind of westernized synergetic Chinese mode. Instead of the ideograms of the Chinese language, he seemed to think primarily in topological terms, also in a way synergetic, as witness his elaboration of one topological principle into both the geodesic dome and his new cartographic projection. Instead of building up his discoveries and analyses out of many small pieces of information, he seems to derive them from a few basic generalized topological and mathematical "ideograms" in his mind; quite a Chinese way of going about things.

It almost seems as if his varied accomplishments are somehow aspects of an indefinable whole, as if locked inside his mind was an ideogramic equation for the fundamental structure of the universe, a grand synergetic generalization from which all of the various specifics had been derived by (to Fuller) self-evident implication. Or I was at least convinced that Fuller believed this, that the universe was itself a synergetic system which he could encompass as one great vibrating ideogram within his mind.

Soon afterward, I drove off into the night with my head spinning with the incredible intellectual smorgasbord that had been crammed into it. There was no question about Fuller's authenticity as a comprehensive genius, a genuine synergetic man. This did not mean that his world-view did not encompass a certain amount of crankiness and odd notions spawned not by analysis or intellection but by the vagaries of his personal fate.

But I knew that I had spoken with a man of true intellectual greatness, and I was left with a pang of insight into the essential loneliness of such a man. Buckminster Fuller is insulated from the world by the conventional barriers of old age: dwindling of the senses. He is also separated from ordinary human contact to some extent by the usual bane of the great, encapsulation in his own myth. Between Fuller and other men is the plate-glass window of his celebrity; Fuller himself could not escape the prison of self-consciousness of his own greatness even if he wanted to, which apparently he does not.

But Buckminster Fuller must experience a loneliness beyond that of the aged great, for inside his head is a fully formed vision of the totality of the universe (entirely valid or not) which transcends the possibility of verbalization in his own tongue, indeed in any known language. This ideogramic symbol for the universe from which his various and manifold concepts, inventions, and achievements radiate like the light of some internal sun must be a thing of blinding beauty to Fuller himself. Inside his head is a dazzling work of art which only he will ever really see. It must be a heavy and a glorious burden to bear. ■

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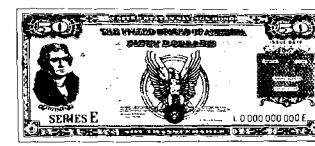

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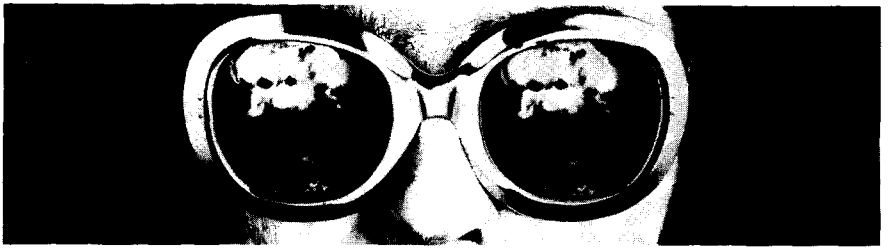

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